CCD-TR820E/TR825E/TR920E/TR930

RMT-708/717

SERVICE MANUAL

US Model
Canadian Model
CCD-TR930
AEP Model
CCD-TR820E/TR825E
UK Model
East European Model
North European Model
Russian Model
CCD-TR820E
E Model
Australian Model
Tourist Model
CCD-TR920E

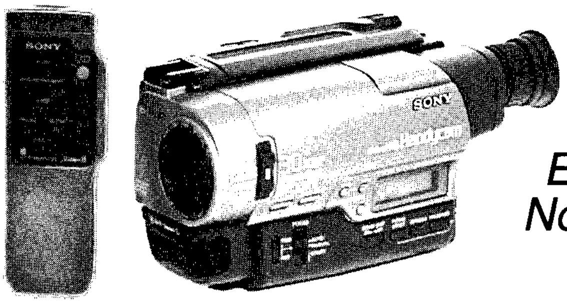


Photo : CCD-TR820E
: RMT-708

Video Hi8
Handycam

B MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8mm Video MECHANICAL ADJUSTMENT MANUAL VII" (9-973-801-11).

SPECIFICATIONS

Video camera recorder

System

Video recording system
CCD-TR930 :
Four rotary heads, Helical scanning FM system (separate SP/LP heads)
CCD-TR820E/TR825E/TR920E :
Two rotary heads, Helical scanning FM system

Audio recording system
Rotary heads, FM system

Video signal
CCD-TR930 :
NTSC color, EIA standards
CCD-TR820E/TR825E/TR920E :
PAL colour, CCIR standards

Usable cassette
8 mm video format cassette (Hi8 or standard 8)

CCD-TR930 :
Recording/Playback time (using 120 min. cassette)
SP mode : 2 hours
LP mode : 4 hours
CCD-TR820E/TR825E/TR920E :
Recording/Playback time (using 90 min. cassette)
SP mode : 1 hour 30 min.
LP mode : 3 hours

CCD-TR930 :
Fastforward/rewind time (using 120 min. cassette)
Approx. 5 min.
CCD-TR820E/TR825E/TR920E :
Fastforward/rewind time (using 90 min. cassette)
Approx. 4 min.

Image device
CCD (Charge Coupled Device)

Viewfinder
CCD-TR930/TR920E :
Electronic viewfinder (Color)
CCD-TR820E/TR825E :
Electronic viewfinder (Monochrome)

Lens
Combined power zoom lens
Filter diameter 1 $^7/_{16}$ in. (37 mm)
15x (Optical)
30x (Digital)

Focal distance
$^3/_{16}$-2 $^3/_8$ in. (4.1 – 61.5 mm)
1 $^7/_8$-27 $^7/_8$ in. (47 – 705 mm)
when converted to a 35 mm still camera

Color temperature
Auto

Minimum illumination
CCD-TR930 :
2 lux (F 1.4)
CCD-TR820E/TR825E/TR920E :
0.7 lux (F 1.4)

illumination range
CCD-TR930 :
2 lux to 100,000 lux
CCD-TR820E/TR825E/TR920E :
0.7lux to 100,000 lux

Recommended illumination
More than 100 lux
(CCD-TR920E only)

- Minimam illumination expresses the light level a camcorder requires to produce a picture. Visible minimum low light expresses the light level to produce a visible signal.

Input and output connectors

S video input/output
(CCD-TR930 only)

S video output
(CCD-TR820E/TR825E/TR920E only)
4-pin mini DIN
Luminance signal : 1 Vp-p, 75 ohms, unbalanced, sync negative
CCD-TR930 :
Chrominance signal : 0.286 Vp-p, 75 ohm, unbalanced
CCD-TR820E/TR825E/TR920E :
Chrominance signal : 0.3 Vp-p, 75 ohm, unbalanced

Video input/output
(CCD-TR930 only)

Video output
(CCD-TR820E/TR825E/TR920E only)
Phono jack, 1 vp-p, 75 ohm, unbalanced, sync negative

Audio input/output
(CCD-TR930 only)

Audio output
(CCD-TR820E/TR825E/TR920E only)
Phono jacks (2 : stereo L and R)
327 mV, (at output impedance 47 kilohm) impedance less than 2.2 kilohm

RFU DC OUT
Special minijack, DC 5 V

Headphone jack
Stereo minijack

LANC control jack
Stereo mini-minijack (ø 2.5 mm)

MIC jack
Minijack, 0.388 mV low impedance with 2.5 to 3.0 V DC, output impedance 6.8 kilohm (ø 3.5 to mm)
Stereo type

Intelligent accessory shoe
(CCD-TR930/TR825E/TR920E only)
8-pin connector

LASER LINK
(CCD-TR930 only)
Video/audio : IR space transmission system according to EIAJ (Electric Industries Association of Japan) standards
Audio carrier wave :
L ch 4.3 MHz
R ch 4.8 MHz

General

Power requirements
7.2 V (battery pack)
8.4 V (AC power adaptor)

Average power consumption
CCD-TR930/TR820E/TR825E :
3.5 W during camera recording
CCD-TR920E :
4.1 W during camera recording

Operating temperature
32°F to 104°F (0°C to 40°C)

Storage temperature
–4°F to +104°F (–20°C to +60°C)

Dimensions (Approx.)
CCD-TR930/TR920E :
4 $^3/_8$ x 4 $^1/_4$ x 7 $^1/_8$ in.
(108 x 107 x 178 mm) (w/h/d)
CCD-TR820E/TR825E:
108 x 107 x 203 mm
(4 $^3/_8$ x 4 $^1/_4$ x 8 in) (w/h/d)

Mass (Approx.)
CCD-TR930/TR920E :
1 lb 11 oz (770 g) excluding the battery pack, lithium battery, cassette and shoulder strap
2 lb (920 g) including the battery pack NP-F330, lithium battery CR2025, cassette and shoulder strap
CCD-TR820E :
780 g (1 lb 11 oz) excluding the battery pack, lithium battery, cassette and shoulder strap
930 g (2 lb) including the battery pack NP-F330, lithium battery CR2025, cassette and shoulder strap

— Continued on next page —

Hi8 VIDEO CAMERA RECORDER

MICROFILM

SONY®

CCD-TR825E :
790 g (1 lb 11 oz) excluding the battery pack, lithium battery, cassette and shoulder strap
940 g (2 lb 1 oz) including the battery pack NP-F330, lithium battery CR2025, cassette and shoulder strap
Microphone
Stereo type
Supplied accessories
See page 3.

AC power adaptor

Power requirements
110 – 240 V AC, 50/60 Hz
Power consumption
25 W
Output voltage
DC OUT : 8.4 V, 1.9 A in operating mode
Battery charge terminal : 8.4 V, 1.4 A in chage mode

Application
Sony battery packs NP-F330, NP-F530, NP-F730, NP-F930 lithium ion type
Operating temperature
32°F to 104°F (0°C to 40°C)
Storage temperature
-4°F to +140°F (-20°C to +60°C)

Dimensions (Approx.)
$3\,^1/_4 \times 1\,^{13}/_{16} \times 6\,^1/_2$ in.
(81x45x163 mm) (w/h/d)
including projecting parts and controls
Mass (Approx.)
1 lb 3 oz (560 g)

Design and specifications are subject to change without notice.

Table for difference of function

Model		CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
Destination		US, CND	AEP,UK,EE,NE,RU	AEP	E, AUS, JE	
Classification		TYPE A	TYPE B	TYPE C	TYPE D	
Remote Commander		RMT-708	RMT-708	RMT-717	RMT-708	
Color System		NTSC	PAL	PAL	PAL	
Lens	Optical	15X	15X	15X	15X	
	Digital	30X	30X	30X	180X	
View Finder		Color EVF	B/W EVF	B/W EVF	Color EVF	Color EVF : with LB-50,VF-111, 112 board and with VC-190 board IC800 B/W EVF : with VF-99 board
VTR REC		○			○	○ : with VC-190 board IC130
Accessory Shoe	Intelligent	○		○	○	○ : with VC-190 board CN205
	Standard		○			
IR Transmitter		○				○ : with MI-29 board IC361
Time Code				○		○ : with MM-35 board IC701
Video Head		4	2	2	2	

- Canadian model is abbreviated as CND.
- East European model is abbreviated as EE.
- North European model is abbreviated as NE.
- Russian model is abbreviated as RU.
- Australian model is abbreviated as AUS.
- Tourist model is abbreviated as JE.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit board Repairing
   - Keep the temperature of the soldering iron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING !!

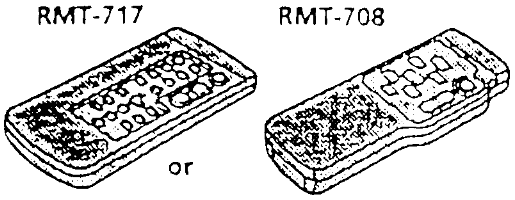
COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

Supplied accessories

1



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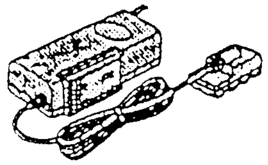

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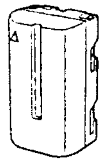

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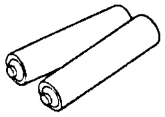

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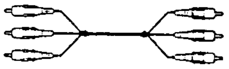

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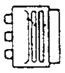

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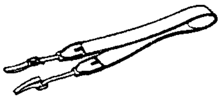

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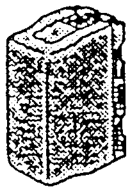


1 **Wireless Remote Commander (1)**
RMT-708 : CCD-TR820E/TR920E/TR930
RMT-717 : CCD-TR825E

2 **AC power adaptor (1)**
AC-V316 : CCD-TR920E/TR930
AC-V326 : CCD-TR820E/TR825E

3 **Battery pack (1)**
NP-F330 : CCD-TR920E
NP-F530 : CCD-TR820E/TR825E/TR930

4 **CR2025 Lithium Battery**
The lithium battery is already installed in your camcorder.

5 **Size AA (R6) battery for Remote Commander (2)**

6 **A/V connecting cable (1)**

7 **21 pin adaptor**
CCD-TR820E/TR825E

8 **Shoulder strap (1)**

9 **Battery case (1)**

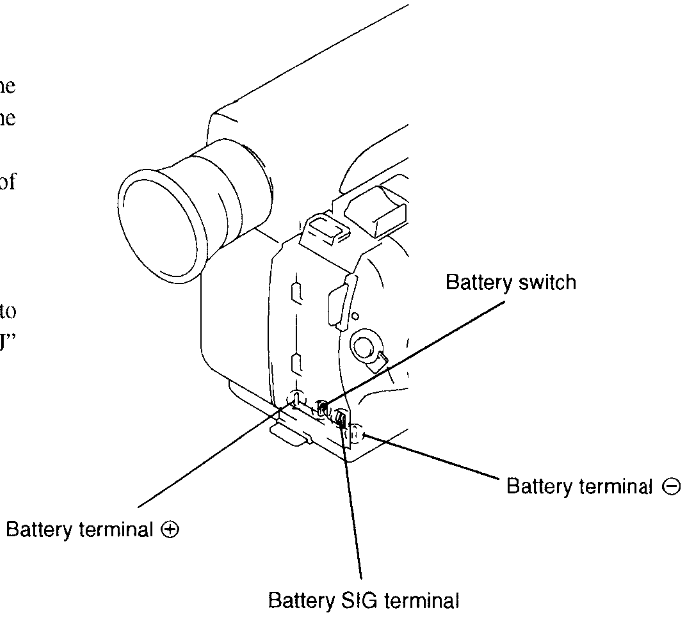
SERVICE NOTE

1. POWER SUPPLY DURING REPAIRS

In this unit, about 25 seconds after power is supplied (8.4V) to the battery terminal using the service power cord (J-6082-223-A), the power is shut off so that the unit cannot operate.
This following two methods are available to prevent this. Take note of which to use during repairs.

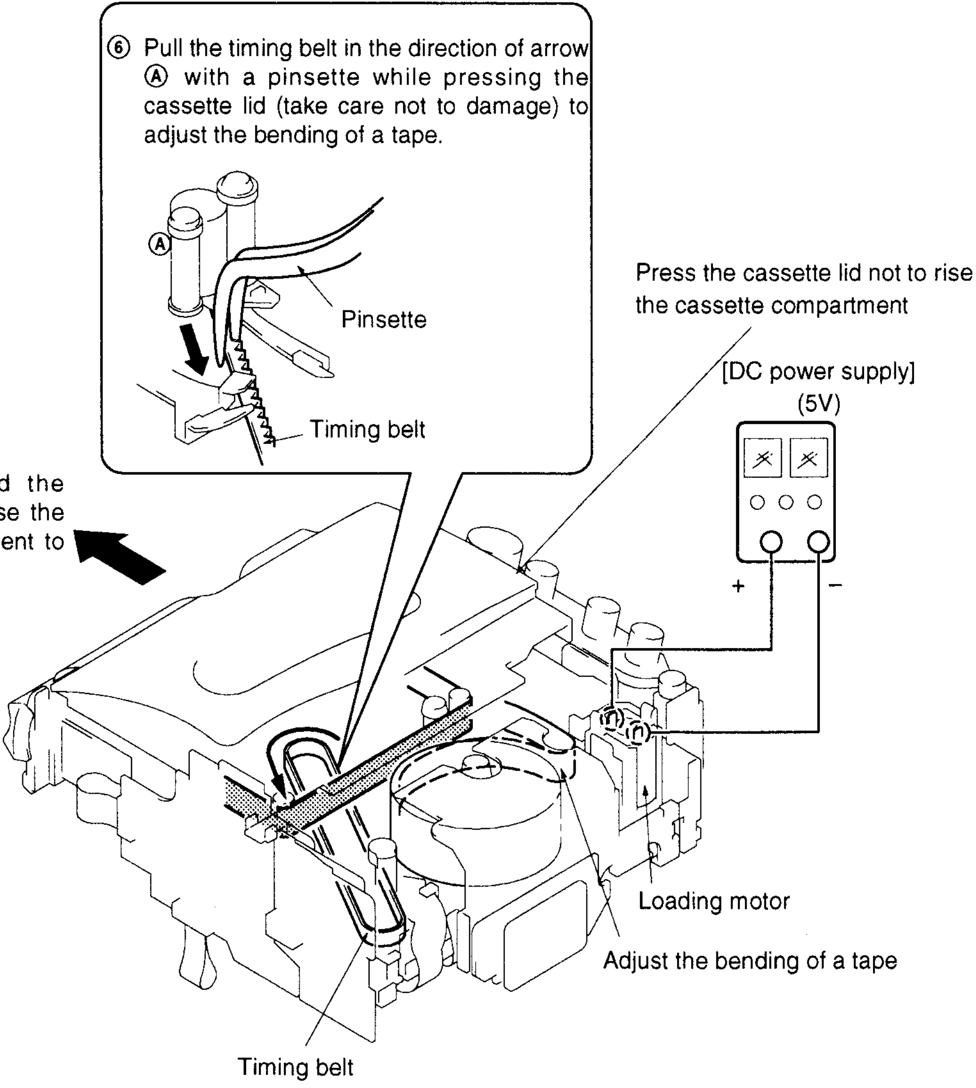
Method 1.
Connect the servicing remote commander RM-95 (J-6082-053-B) to the LANC jack, and set the remote commander switch to the "ADJ" side.

Method 2.
Press the following battery switch using adhesive tape, etc.


Battery switch
Battery terminal ⊖
Battery terminal ⊕
Battery SIG terminal

2. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

① Refer to 2-1. to remove the front panel assembly.
② Refer to 2-2. to remove the cabinet (R) assembly.
③ Refer to 2-8. to remove the battery panel assembly.
④ Refer to 2-10. to remove the cabinet (L) assembly.
⑤ Add +5V from the DC POWER SUPPLY and unload with a pressing the cassette lid.



⑥ Pull the timing belt in the direction of arrow Ⓐ with a pinsette while pressing the cassette lid (take care not to damage) to adjust the bending of a tape.

⑦ Let go your hold the cassette lid and rise the cassette compartment to take out a cassette.

Ⓐ
Pinsette
Timing belt
Press the cassette lid not to rise the cassette compartment
[DC power supply]
(5V)
+
–
Loading motor
Adjust the bending of a tape
Timing belt

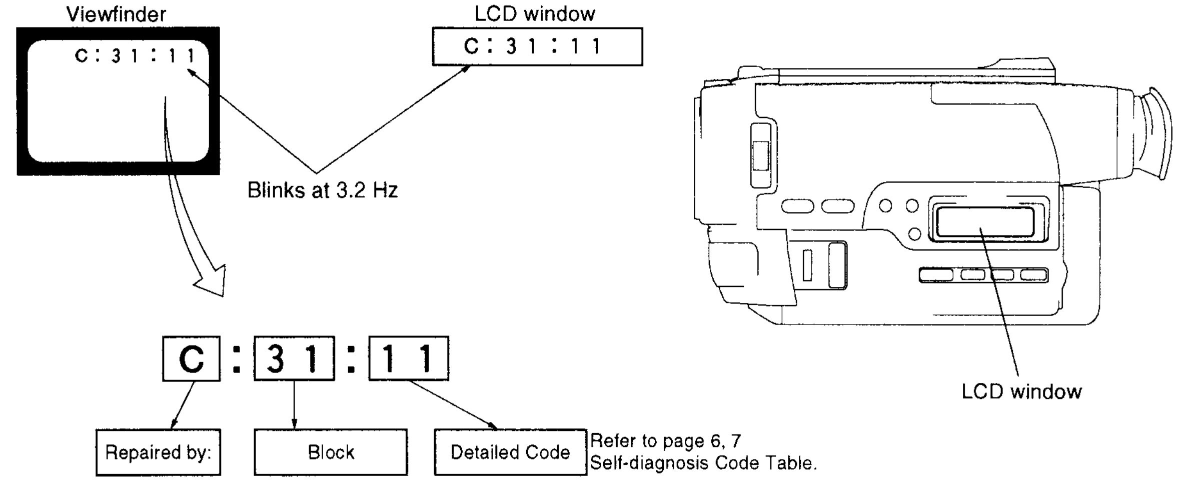
SELF-DIAGNOSIS FUNCTION

1. Self-diagnosis Function

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder or LCD window what to do. This function consists of two display; self-diagnosis display and service mode display.
Details of the self-diagnosis functions are provided in the Instruction manual.

2. Self-diagnosis Display

When problems occur while the unit is operating, the counter of the viewfinder or LCD window shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the "repaired by:", "block" in which the problem occurred, and "detailed code" of the problem.


Viewfinder
C : 3 1 : 1 1
LCD window
C : 3 1 : 1 1
Blinks at 3.2 Hz
C : 3 1 : 1 1
Repaired by:
Block
Detailed Code
LCD window

Refer to page 6, 7
Self-diagnosis Code Table.

C : Corrected by customer
H : Corrected by dealer
E : Corrected by service engineer

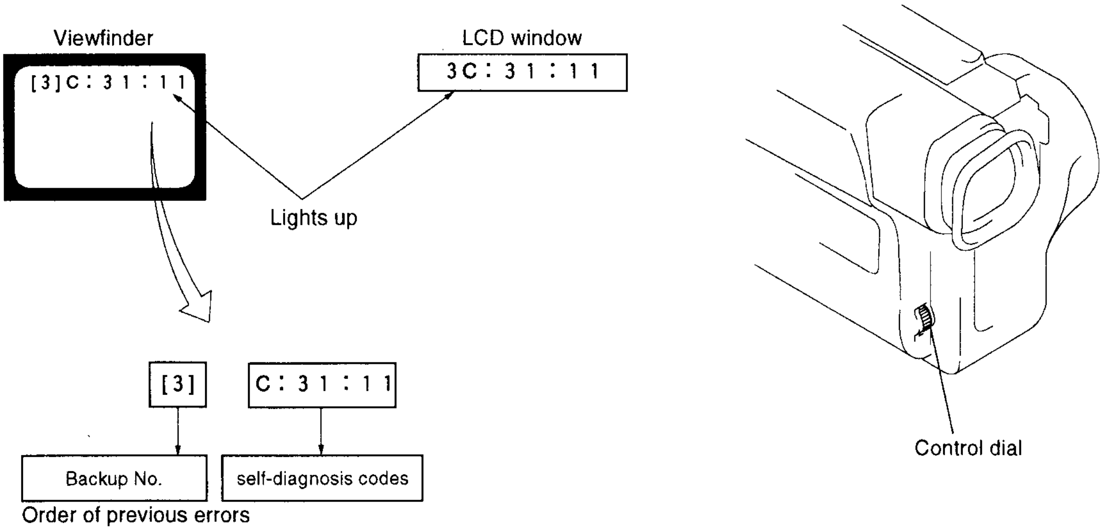
Indicates the appropriate step to be taken.
E.g.
31 .... Reload the tape.
32 .... Turn on power again.

3. Service Mode Display

The service mode display shows up to six self-diagnosis codes shown in the past.

3-1. Display Method

While pressing the "STOP" key, set the switch from OFF to "CAMERA" or "VTR or PLAYER", and continue pressing the "STOP" key for 5 seconds continuously. The service mode will be displayed, and the counter will show the backup No. and the 5-character self-diagnosis codes.


Viewfinder
[3] C : 3 1 : 1 1
LCD window
3C : 3 1 : 1 1
Lights up
[3]
C : 3 1 : 1 1
Backup No.
self-diagnosis codes
Order of previous errors
Control dial

3-2. Switching of Backup No.

By rotating the control dial, past self-diagnosis codes will be shown in order. The backup No. in the [] indicates the order in which the problem occurred. (If the number of problems which occurred is less than 6, only the number of problems which occurred will be shown.)

[1] : Occurred first time	[4] : Occurred fourth time
[2] : Occurred second time	[5] : Occurred fifth time
[3] : Occurred third time	[6] : Occurred the last time

3-3. End of Display

Turning OFF the power supply will end the service mode display.

Note: The self-diagnosis display data will be backed up by the coin-type lithium battery. When this coin-type lithium battery is disconnected, the self-diagnosis data will be lost by initialization.

4. Self-diagnosis Code Table

Self-diagnosis Code					Symptom/State	Correction
Repaired by:	Block Function		Detailed Code			
C	2	1	0	0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2	2	0	0	Video head is dirty.	Clean with the optional cleaning cassette.
C	2	3	0	0	Non-standard battery is used.	Use the InfoLITHIUM battery.
C	3	1	1	0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	1	1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	2	0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	1	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	2	T reel fault	Load the tape again, and perform operations from the beginning.
C	3	1	2	3	S reel fault	Load the tape again, and perform operations from the beginning.
C	3	1	3	0	FG fault when starting capstan	Load the tape again, and perform operations from the beginning.
C	3	1	3	1	FG fault during normal capstan operations	Load the tape again, and perform operations from the beginning.
C	3	1	4	0	FG fault when starting drum	Load the tape again, and perform operations from the beginning.
C	3	1	4	1	PG fault when starting drum	Load the tape again, and perform operations from the beginning.
C	3	1	4	2	FG fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	3	1	4	3	PG fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	3	1	4	4	Phase fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	3	2	1	0	LOAD direction loading motor time-out	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	1	1	UNLOAD direction loading motor time-out	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	1	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	2	T reel fault	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	3	S reel fault	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	0	FG fault when starting capstan	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	1	FG fault during normal capstan operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	0	FG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	1	PG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	2	FG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	3	PG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.

Self-diagnosis Code					Symptom/State	Correction
Repaired by:	Block Function		Detailed Code			
C	3	2	4	4	Phase fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
E	6	1	0	0	Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Pin ⑲ of CN113 of VC-190 board) when focusing is performed when the focus dial is rotated in the focus manual mode and the focus motor drive circuit (IC252, IC255 of VC-190 board) when the focusing is not performed.
E	6	1	1	0	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the lens block zoom reset sensor (Pin ㉑ of CN113 of VC-190 board) when zooming is performed when the zoom lens is operated and the zoom motor drive circuit (IC252, 255 of VC190 board) when zooming is not performed.
E	6	2	0	0	Handshake correction function does not work well.(With pitch angular velocity sensor output stopped)	Inspect pitch angular velocity sensor (SE452 of SE-61 board) peripheral circuits.
E	6	2	0	1	Handshake correction function does not work well.(With yaw angular velocity sensor output stopped)	Inspect yaw angular velocity sensor (SE451 of SE-61 board) peripheral circuits.

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There is the color reproduction standard frame at the back of the book.

SECTION 1
GENERAL

This section is extracted from instruction manual of CCD-TR930.

Before you begin

Using this manual

As you read through this manual, buttons and settings on the camcorder are shown in capital letters.
e.g. Set the POWER switch to CAMERA.
As indicated with ♪ in the illustrations, you can hear the beep sound to confirm your operation.

Note on TV color systems

TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system-based TV.

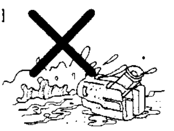
Precaution on copyright

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

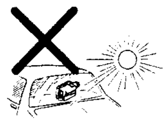
Precautions on camcorder care

- **The LCD screen and/or the color viewfinder are manufactured using high-precision technology. However, there may be some tiny black points and/or bright points (red, blue or green in color) that constantly appear on the LCD screen or in the viewfinder. These points are normal in the manufacturing process and do not affect the recorded picture in any way. Over 99.99% are operational for effective use.**
- Do not let the camcorder get wet. Keep the camcorder away from rain and sea water. Letting the camcorder get wet may cause the unit to malfunction, and sometimes this malfunction cannot be repaired **[a]**.
- Never leave the camcorder exposed to temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight **[b]**.

[a]



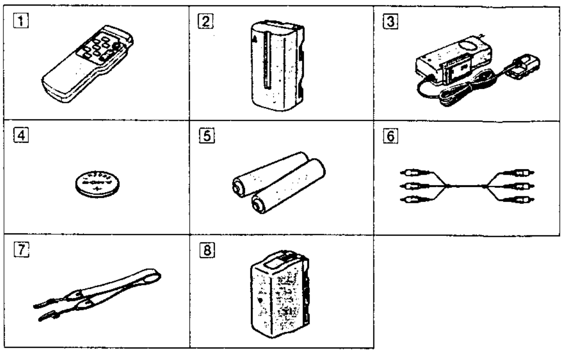
[b]



Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

Checking supplied accessories

Check that the following accessories are supplied with your camcorder.



1 **Wireless Remote Commander** (1) (p.66)

2 **NP-F330 Battery pack** (1) (p.6)

3 **AC-V316/V316A AC power adaptor** (1) (p.6, 22)

4 **CR2025 Lithium Battery** (1) (p.46)
The lithium battery is already installed in your camcorder.

5 **Size AA (R6) battery for Remote Commander** (2) (p.67)

6 **A/V connecting cable** (1) (p.18, 44)

7 **Shoulder strap** (1) (p.68)

8 **Battery case** (1) (p.23)

Getting started

Charging and installing the battery pack

Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC power adaptor.

This camcorder operates with the "InfoLITHIUM" battery. If you use any other battery to operate your camcorder, the camcorder may not operate or the battery life may be shortened.

"InfoLITHIUM" is a trade mark of Sony Corporation.

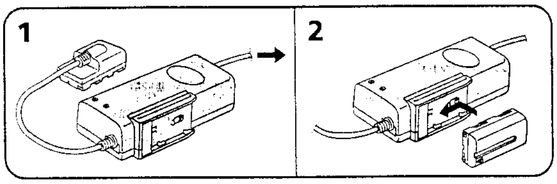
Charging the battery pack

Charge the battery pack on a flat surface without vibration.

(1) Connect the power cord to a wall outlet.

(2) Align the surface of the battery pack indicated by the ▶ mark with the edge of the terminal shutter of the AC power adaptor. Then fit and slide the battery pack in the direction of the arrow. The CHARGE lamp (orange) lights up. Charging begins.

When the CHARGE lamp goes out, **normal charge** is completed. For **full charge**, which allows you to use the battery longer than usual, leave the battery pack in place for approximately one hour. Unplug the unit from the wall outlet, then remove the battery pack and install it into the camcorder. You can also use the battery pack before it is completely charged.



Charging time

Battery pack	NP-F330 (supplied)	NP-F530	NP-F730	NP-F930
Charging time* (min.)	160 (100)	170 (110)	250 (190)	330 (270)

The time required for a normal charge is indicated in parentheses.
* Approximate minutes to charge an empty battery pack using the supplied AC power adaptor (full charge). (Lower temperatures require a longer charging time.)

Charging and installing the battery pack

Battery lifee

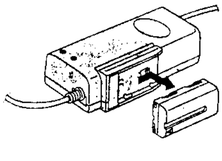
Battery pack	NP-F330 (supplied)	NP-F530	NP-F730	NP-F930
Continuous recording time* (min.)	70 (65)	150 (135)	305 (275)	480 (435)
Typical recording time* (min.)	40 (35)	85 (75)	170 (155)	270 (245)

Numbers before the parentheses indicate the time when you use a fully charged battery.
Numbers in the parentheses indicate the time when you use a normal chaged battery.
* Approximate continuous recording time indoors.
** Approximate minutes when recording while you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.

Note on remaining battery time indication during recording
Remaining battery time is displayed in the viewfinder. It may not be displayed properly, however, depending on the conditions and circumstances of use.

To remove the battery pack

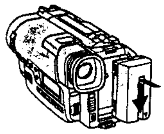
Slide the battery pack in the direction of the arrow.



Notes on charging the battery pack
- The CHARGE lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
- If the CHARGE lamp does not light, disconnect the power cord. After about one minute, reconnect the power cord again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.
- When a fully charged battery pack is installed, the CHARGE lamp will light once, then go out.

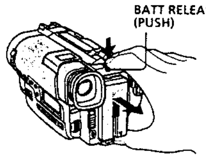
Installing the battery pack

Align the grooves of the battery pack with the receptacles of the camcorder and slide the battery pack down until it catches on the battery release lever and clicks. Attach the battery pack to the camcorder securely.



To remove the battery pack

While pressing the BATT (battery) RELEASE (PUSH) button, slide the battery pack in the direction of the arrow.

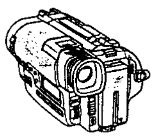


You can look at the demonstration of the functions available with this camcorder (p.26).

Using the camcorder with the finder slid out or lifted up

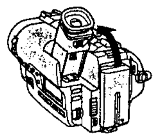
When NP-F730 or NP-F930 is installed

When you install NP-F730 or NP-F930, slide out the viewfinder for more comfortable camera recording.



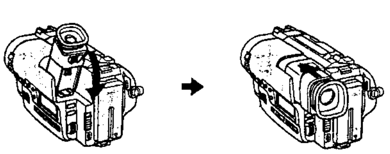
When you record in a low angle

Lift up the viewfinder.



To restore the viewfinder

Push the viewfinder down or slide it into the camcorder.



Note on the battery pack

Do not carry the camcorder by grasping the battery pack.

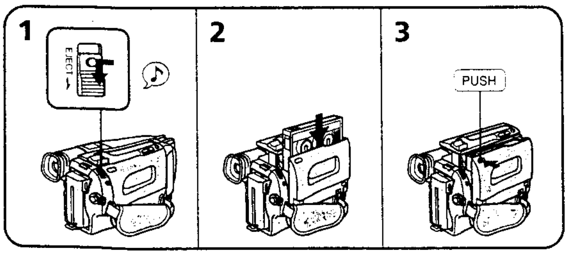
Inserting a cassette

Make sure that the power source is installed. When you want to record in the Hi8 system, use Hi8 video cassette **Hi8**.

(1) While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow. The cassette compartment automatically lifts up and opens.

(2) Insert a cassette with the window facing out.

(3) Close the cassette compartment by pressing the PUSH mark on the cassette compartment. The cassette compartment automatically goes down.



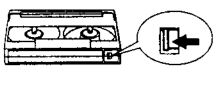
To eject the cassette

While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow.

To prevent accidental erasure

Slide the tab on the cassette to expose the red mark. If you insert the cassette with the red mark exposed and close the cassette compartment, the beeps sound for a while. If you try to record with the red mark exposed, the ⌧ and ≜ indicators flash in the viewfinder, and you cannot record.

To re-record on this tape, slide the tab back out covering the red mark.



Basic operations

Camera recording

Make sure that the power source is installed, a cassette is inserted and that the START/STOP MODE switch is set to ≜ . Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working correctly.

When you use the camcorder for the first time, power on it and reset the date and time to your time before you start recording. (p.47)

The date is automatically recorded for 10 seconds after you start recording (**AUTO DATE feature**). This feature works only once a day.

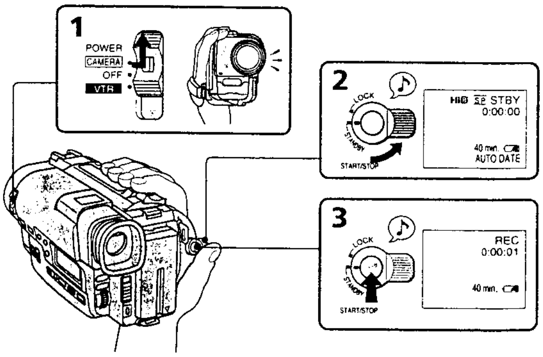
To save battery power, the picture in the viewfinder appears only when you bring your face close to the viewfinder with STANDBY up (**Finder power save**).

(1) While pressing the small green button on the POWER switch, set it to CAMERA.

(2) Turn STANDBY up.

(3) Press START/STOP. The camcorder starts recording. The "REC" indicator appears. The camera recording/battery lamps located on the front light up. The AUTO DATE indicator appears.

You can also select Recording mode, SP (standard play) mode or LP (long play) mode. Set REC MODE in the menu system according to the length of your planned recording before you start.



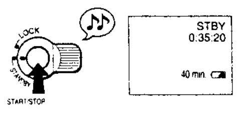
To stop recording momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder (**Standby mode**).

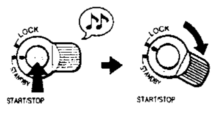
To finish recording [b]

Press START/STOP again. Turn STANDBY down and set the POWER switch to OFF. Then, eject the cassette and remove the battery pack.

[a]

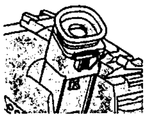


[b]



To focus the viewfinder lens

If you cannot see the indicators in the viewfinder clearly, or after someone else has used the camcorder, focus the viewfinder lens. Turn the viewfinder lens adjustment lever so that the indicators in the viewfinder come into sharp focus.



Note on the lighting aperture

If direct sunlight enters the lighting aperture, the picture in the viewfinder appears brighter. When this happens, colors in the viewfinder may change.

Note on Standby mode

If you leave the camcorder in Standby mode for 5 minutes while the cassette is inserted, the camcorder turns off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down and up again. To start recording, press START/STOP.

Notes on recording mode

- This camcorder records and plays back in SP (standard play) mode and in LP (long play) mode. However, the playback quality in LP mode will not be as good as that in SP mode.
- When you record a tape in LP mode on this camcorder, we recommend you to play the tape on this camcorder. When you play back the tape on other camcorders or VCRs, noise may occur on a picture or sound.
  Noise may occur also when you play on this camcorder the tape recorded in LP mode on other camcorders or VCRs.

Note on recording

When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. This will ensure that you won't miss any start-up scenes when you play back the tape.

Notes on the tape counter

- The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.
- If the tape is recorded in SP and LP modes mixed, the tape counter shows incorrect recording time. When you intend to edit the tape using the tape counter as a guide, record in same (SP or LP) mode.

Note on the beep sound

As indicated with ♪ in the illustration, a beep sounds when you turn the power on or when you start recording, and two beeps sound when you stop recording, confirming the operation. Several beeps also sound as a warning of any unusual condition of the camcorder.
Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, select "OFF" in the menu system.

Note on the AUTO DATE feature

The clock is set to East Coast Standard Time at the factory. You can reset the clock in the menu system. You can change the AUTO DATE settings by selecting ON or OFF in the menu system. The AUTO DATE feature shows the date automatically once a day.
However, the date may automatically appear more than once a day when:
- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.
- you set AUTO DATE to OFF once and set it to ON again in the menu system.

Notes on finder power save

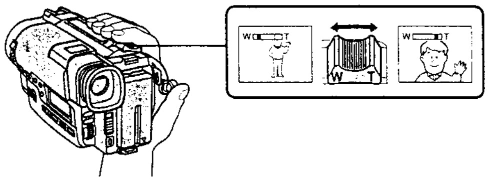
- The recording continues even when the picture in the viewfinder disappears during recording.
- If you set VF PW-SAVE to off in the menu system, the picture in the viewfinder does not disappear even when you turn your face away from the viewfinder.

When moving from indoors to outdoors (or vice versa)

Turn STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

Using the zoom feature

Zooming is a recording technique that lets you change the size of the subject in the scene.
For more professional-looking recordings, use the zoom function sparingly.
"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears farther away)



Zooming speed (Variable speed zooming)

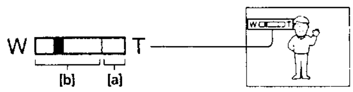
Move the power zoom lever a little for a slower zoom, move it further for a faster zoom.

When you shoot a subject using a telephoto zoom

If you cannot get a sharp focus while in extreme telephoto zoom, move the power zoom lever to the "W" side until the focus is sharp. You can shoot a subject that is at least about 2 5/8 feet (about 80cm) away from the lens surface in the telephoto position, or about 1/2 inch (about 1cm) away in the wide-angle position.

Notes on digital zoom

- More than 15x zoom is performed digitally (x30), and the picture quality deteriorates as you go toward the "T" side. If you do not want to use the digital zoom, set the D ZOOM function to OFF in the menu system.
- The right side **[a]** in the power zoom indicator shows the digital zooming zone, and the left side **[b]** shows the optical zooming zone. If you set the D ZOOM function to OFF, the **[a]** zone disappears.



Selecting the SATRT/STOP mode

Your camcorder has two modes besides normal start/stop mode. These modes enable you to take a series of quick shots resulting in a lively video.

(1) Set the START/STOP MODE switch to the desired mode.

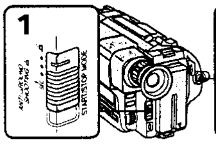
♙ : Recording starts when you press START/STOP, and stops when you press it again (normal mode).

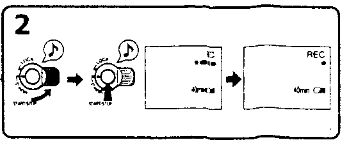
ANTI GROUND SHOOTING ⊥ : The camcorder records only while you press down START/STOP so that you can avoid recording unnecessary scenes.

5 SEC: When you press START/STOP, the camcorder records for 5 seconds and then stops automatically.

(2) Turn STANDBY up and press START/STOP. Recording starts.

If you selected 5 SEC, five dots appear in the viewfinder. The dots disappear at a rate of one per second. When five seconds elapse and all the dots disappear, the camcorder switches to Standby mode automatically.





To extend the recording time in 5 SEC mode

Press START/STOP again before all the dots disappear. Recording continues for about 5 seconds from the moment you pressed START/STOP.

To return to normal recording

Set the START/STOP MODE switch to ♙. If you set the switch while recording, recording continues.

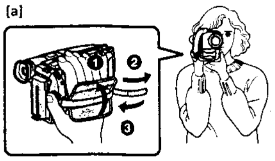
Note on 5-SEC and ANTI GROUND SHOOTING ⊥ mode

You cannot use FADER if you select 5 SEC or ANTI GROUND SHOOTING ⊥.

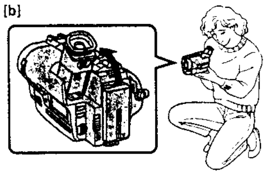
Hints for better shooting

For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:

[a]



[b]

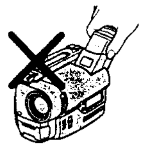


- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb **[a]**.
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it. Be sure not to touch the built-in microphone.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting recording angle. Lift the viewfinder up to record from a low position **[b]**.

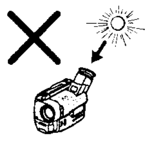
Place the camcorder on a flat surface or use a tripod
Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder.
When attaching a non-Sony tripod, make sure that the length of the tripod screw is less than $^{9}/_{32}$ inch (6.5 mm). Otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.

Cautions on the viewfinder
- Do not pick up the camcorder by the viewfinder **[c]**.
- Do not place the camcorder so as to point the viewfinder toward the sun. The inside of the viewfinder may be damaged. Be careful when placing the camcorder under sunlight or by a window **[d]**.

[c]



[d]



Checking the recorded picture

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder.

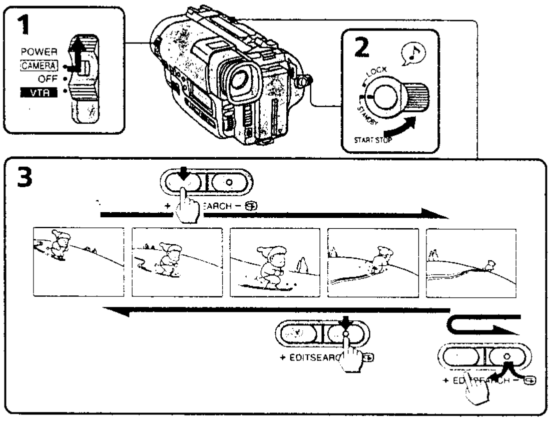
(1) While pressing the small green button on the POWER switch, set it to CAMERA.

(2) Turn STANDBY up.

(3) Press the – (⊜) side of EDITSEARCH momentarily; the last few seconds of the recorded portion play back (**Rec Review**).

You can monitor the sound from the headphones.

Hold down the – side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side (**Edit Search**).



To stop playback
Release EDITSEARCH.

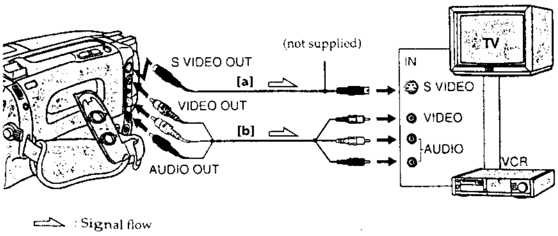
To begin re-recording
Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the cassette, the transition between the last scene you recorded and the next scene you record will be smooth.

Connections for playback

You can use this camcorder as a VCR by connecting it to your TV for playback. There are some ways to connect the camcorder to your TV. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you to use house current for the power source.

Connecting directly to a VCR/TV with Video/Audio input jacks

Open the jack cover. If your TV is already connected to a VCR, connect the camcorder to the LINE IN inputs on the VCR by using the supplied A/V connecting cable. Set the input selector on the VCR to LINE. Set the TV/VCR selector on the TV to VCR.
If your VCR or TV has an S video jack, connect using the S video cable (not supplied) **[a]** to obtain a high quality picture.



If you are going to connect the camcorder using the S video cable (not supplied) **[a]**, you do not need to connect the yellow (video) plug of the A/V connecting cable **[b]**.

If your VCR or TV is a monaural type
Connect only the white plug for audio on both the camcorder and the VCR or the TV. With this connection, the sound is monaural even in stereo mode.

To connect to a VCR or TV without Video/Audio input jacks
Use the RFU-95UC RFU adaptor (not supplied).

Playing back a tape

Using the AV cordless IR receiver – LASER LINK

Once you connect the AV cordless IR receiver (not supplied) having the ⚡ LASER LINK mark to your TV or VCR, you can easily view the picture on your TV. For details, refer to the instruction manual of the AV cordless IR receiver. LASER LINK is a system which transmits and receives a picture and sound between video equipment having the ⚡ mark by using infrared rays. LASER LINK is a trademark of Sony Corporation.

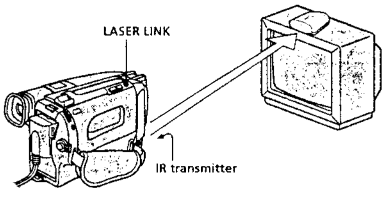
(1) Connect the receiver to the TV, and turn on the IR receiver power.

(2) Turn on the TV power, and set the TV/VCR selector on the TV to VCR.

(3) Set the POWER switch to VTR and press LASER LINK on the camcorder.
The LASER LINK button indicator lights up.

(4) Press ⊳ on the camcorder.
The picture appears on the TV screen.

(5) Point the IR transmitter on the camcorder toward the infrared sensor on the IR receiver so that the blue background clearly appears on the TV.



To cancel the LASER LINK function
Press LASER LINK.

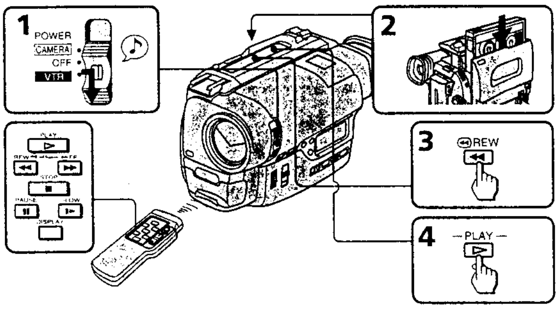
You can monitor the playback picture in the viewfinder. You can also monitor a picture on a TV screen, after connecting the camcorder to a TV or VCR.

(1) While pressing the small green button on the POWER switch, set it to VTR. The video control buttons light up.

(2) Insert the recorded tape with the window facing out.

(3) Press ◀◀ to rewind the tape.

(4) Press ▷ to start playback.



To stop playback, press □.
To rewind the tape, press ◀◀.
To fast-forward the tape rapidly, press ▶▶.

Using the remote commander

You can control playback using the supplied Remote Commander. Before using the Remote Commander, insert the size AA (R6) batteries.

To display the viewfinder screen indicators on the TV

Press DISPLAY on the Remote Commander. To erase the indicators, press DISPLAY again.

To monitor the sound while viewing the playback picture in the viewfinder
Connect headphones (not supplied) to the 🎧 jack.

Note on the lens cover
The lens cover does not open when the POWER switch is set to VTR. Do not open the lens cover manually. It may cause malfunction.

Various playback modes

To view a still picture (playback pause)

Press ❚❚ during playback. To resume playback, press ❚❚ or ▷.

To locate a scene (picture search)

Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing the tape or rewinding (skip scan)

Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▷.

To view the picture at 1/5 speed (slow playback)

Press ❚▶ on the Remote Commander during playback. To resume normal playback, press ▷. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

To select the playback sound

Change the "HiFi SOUND" mode setting in the menu system.

Notes on playback
- Streaks appear and the sound is muted in the various playback modes.
- When playback pause mode lasts for 5 minutes, the camcorder automatically enters stop mode.

Advanced operations

Using alternative power sources

You can choose any of the following power sources for your camcorder: battery pack, the house current, alkaline battery and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	Supplied AC power adaptor
Outdoors	Battery pack	InfoLITHIUM battery NP-F330 (supplied), NP-F530, NP-F730, NP-F930
	Size AA (LR6) Alkaline battery	Battery case (supplied)
In the car	12 V or 24 V car battery	Sony car battery charger DC-V515A

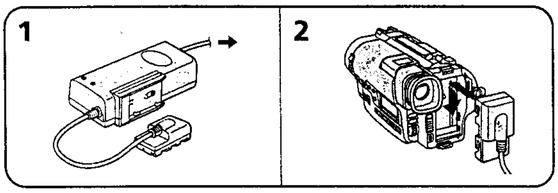
Note on power sources
Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape. If this happens, restore the power supply again immediately.

Using the house current

To use the supplied AC power adaptor:

(1) Connect the AC power cord to a wall outlet.

(2) Slide the connecting plate down into the guides at the rear of the camcorder until it clicks.



To remove the connecting plate
The connecting plate is removed in the same way as battery pack.

WARNING
The power cord must only be changed at a qualified service shop.

PRECAUTION
The set is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the set itself has been turned off.

Notes on the VTR/CAMERA lamp
- The VTR/CAMERA lamp will remain lit for a while even if the unit is unplugged after use. This is normal.
- If the VTR/CAMERA lamp does not light, disconnect the power cord. After about one minute, reconnect the power cord.

Using alkaline batteries

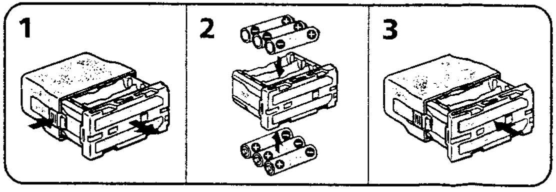
Use the battery case (supplied) and six size AA (LR6) Sony Alkaline batteries (not supplied).

(1) Remove the battery holder from the battery case.

(2) Insert six new alkaline batteries into the battery holder, following the marking on the holder to be sure the batteries are installed in the correct direction.

(3) Insert the battery holder with the alkaline batteries.

(4) Insert the battery case with the alkaline batteries to the battery mounting surface of the camcorder in the same way as the battery pack.



Battery Life

Using alkaline batteries at 77°F (25°C).

Continuous recording time	165 min.
Typical recording time	95 min.

Notes
- You may not use the battery case in cold environment.
- The battery life may be shorter depending on the using environment.
- The above battery lives are estimates. The battery life may be shorter depending on the storage condition of the battery before being purchased and temperature.

When the battery case is installed
Slightly raise the viewfinder when you use the camcorder.

To remove the battery case
The battery case is removed in the same way as the battery pack.
When you replace the batteries, be sure to remove the battery case from the camcorder to prevent malfunction.

Using a car battery

Use Sony DC-V515A car battery charger (not supplied). Connect the car battery cord to the cigarette lighter socket of a car (12 V or 24 V). Connect the car battery charger and to the camcorder in the same way as you connect the AC power adaptor.

To remove the car battery charger
The car battery charger is removed in the same way as the AC power adaptor.

This mark indicates that this product is a genuine accessory for Sony video products.
When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.

Changing the mode settings

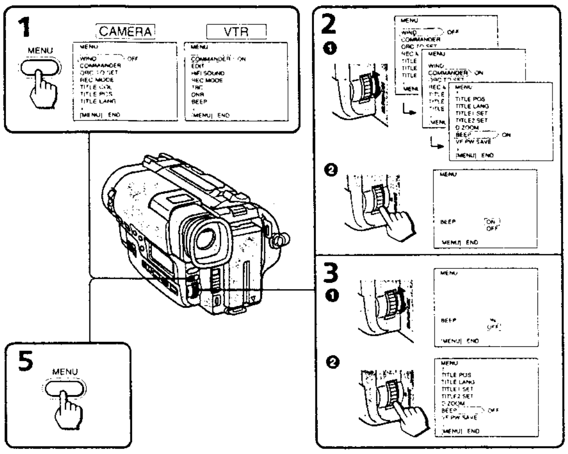
You can change the mode settings in the menu system to further enjoy the features and functions of the camcorder.

(1) Press MENU to display the menu.

(2) Turn the control dial to select the desired item, then press the dial.

(3) Turn the control dial to select the desired mode, then press the dial. If you want to change the other modes, repeat steps 2 and 3.

(4) Press MENU to erase the menu display.



Selecting the mode setting of each item

Items for both CAMERA and VTR modes

COMMANDER <ON/OFF>
- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander.

REC MODE* <SP/LP>
- Select SP when recording in SP (standard play) mode.
- Select LP when recording in LP (long play) mode.

BEEP* <ON/OFF>
- Select ON so that beeps sound when you start/stop recording, etc.
- Select OFF when you do not want to hear the beep sound.

VF PW-SAVE* <ON/OFF>
- Select ON so that the picture in the viewfinder appears only when you bring your face close to the viewfinder.
- Select OFF when you want to display the picture in the viewfinder all the time.

Items for CAMERA mode only

WIND <ON/OFF>
- Select ON to reduce wind noise when recording in strong wind.
- Normally select OFF.

ORC TO SET* <ORC ON>
Select this item and press the START/STOP button to automatically adjust the recording condition to get the best possible recording. If you have already perform this function, "ORC ON" is displayed.

TITLE COL* <WHITE/YELLOW/VIOLET/RED/CYAN/GREEN/BLUE>
Select the color of the title.

TITLE POS* <CENTER/BOTTOM>
- Select CENTER to center the title in the picture.
- Select BOTTOM to position the title at the bottom of the picture.

TITLE LANG* <ENGLISH/FRANÇAIS/ESPAÑOL/PORTUGUÊS>
Select the language of the preset titles.

TITLE 1 SET* TITLE 2 SET*
Select to store your own original titles.

D ZOOM* <ON/OFF>
- Select ON to activate digital zooming.
- Select OFF not to use the digital zoom. The camera goes back to 15x zoom.

REC LAMP* <ON/OFF>
- Select OFF when you do not want the camera recording/battery lamp at the front of the unit to light up.
- Normally select ON.

AUTO DATE* <ON/OFF>
- Select ON to record the date for 10 seconds after recording has started.
- Select OFF not to record the date.

CLOCK SET*
Select this item to reset the date or time.

DEMO MODE* <ON/OFF>
- Select ON to make the demonstration appear without cassette.
- Select OFF to deactivate the demonstration mode.

Notes on DEMO MODE
- DEMO MODE is set to STBY (Standby) at the factory and the demonstration starts about 10 minutes after you set the POWER switch to CAMERA without inserting a cassette. Note that you cannot select STBY of DEMO MODE in the menu system.
- You cannot select DEMO MODE when a cassette is inserted in the camcorder.
- If you insert a cassette during the demonstration, the demonstration stops. You can start recording as usual. DEMO MODE automatically returns to STBY.

To look at the demonstration at once
Eject the cassette, if inserted. Select ON of DEMO MODE and erase the menu display. The demonstration will begin. When you turn off the camcorder once, DEMO MODE automatically returns to STBY.

Items for VTR mode only

EDIT <ON/OFF>
- Select ON to minimize picture deterioration when editing.
- Normally select OFF.

HiFi SOUND <STEREO/1/2>
- Normally select STEREO.
- Select 1 or 2 to play back a dual sound track tape.

TBC* <ON/OFF>
- Select ON to correct for jitter.
- Select OFF not to correct for jitter.
The picture may not be steady when played back.

Note on TBC setting
Set TBC to OFF when playing back:
- A tape you have dubbed over.
- A tape on which you recorded the signal of a TV game or similar machine.

If the playback picture fluctuates while you hold the camcorder, set TBC to OFF.

DNR* <ON/OFF>
- Select ON to reduce noise.
- Select OFF to not reduce noise.

The following settings work only during playback
EDIT, HiFi SOUND, TBC, and DNR.

* These settings are retained even when the battery is removed, as long as the lithium battery is in place.

Fade-in and fade-out

You can fade in or out to give your recording a professional appearance.
When fading in, the picture gradually fades in from black or mosaic while the sound increases. When fading out, the picture gradually fades to black or mosaic while the sound decreases.

When fading in [a]

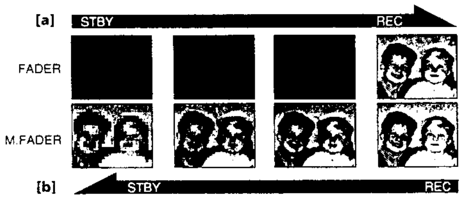
(1) While the camcorder is in Standby mode, press FADER. The fade indicator starts flashing.

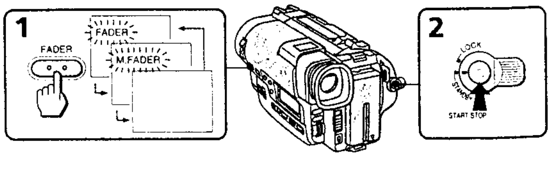
(2) Press START/STOP to start recording. The fade indicator stops flashing.

When fading out [b]

(1) During recording, press FADER. The fade indicator starts flashing.

(2) Press START/STOP to stop recording. The fade indicator stops flashing, and then recording stops.





To cancel the fade-in/fade-out function

Before pressing START/STOP, press FADER until the fade indicator disappears.

When the date or time indicator is displayed
The date or time indicator does not fade in or fade out.

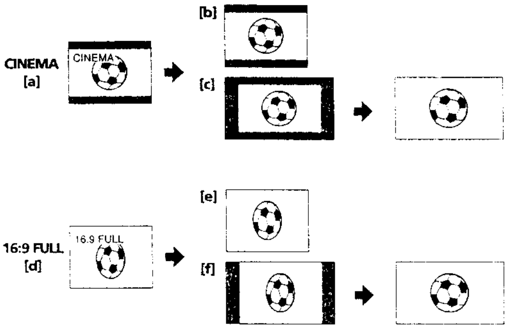
Notes on titles
- While fading in or fading out, you cannot superimpose a title.
- While a title is displayed, the picture does not fade in or out.

When START/STOP MODE is set to 5SEC or ANTI GROUND SHOOTING ⊥
You cannot use the fader function.

Using the wide mode function

Selecting the desired mode

You can record a cinemalike picture (CINEMA) or a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9 FULL).



CINEMA

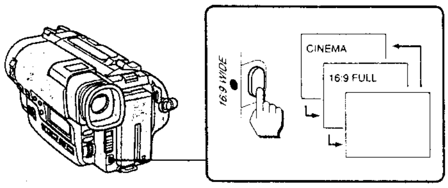
Black bands appear at the top and the bottom of the screen, and the viewfinder **[a]** and a normal TV screen **[b]** look wide. You can also watch the picture without black bands on a wide-screen TV **[c]**. When you select the CINEMA mode, DATE, TIME and the battery indicators are displayed above.

16:9 FULL

The picture in the viewfinder **[d]** or on a normal TV **[e]** is horizontally compressed. You can watch the picture of normal images on a wide-screen TV **[f]**.

Using the wide mode function

While the camcorder is in Standby mode, press 16:9 WIDE repeatedly so that the desired mode indicator appears in viewfinder. While recording, you cannot change the mode.



To cancel wide mode

Press 16:9 WIDE repeatedly until the wide mode indicator disappears.

To watch the tape recorded in wide mode

To watch the tape recorded in CINEMA mode, set the screen mode of the wide-screen TV to zoom mode. To watch the tape recorded in 16:9 FULL mode, set it to full mode. For details, refer to the instruction manual of your TV.
Note that the picture recorded in 16:9 FULL mode looks compressed on a normal TV.

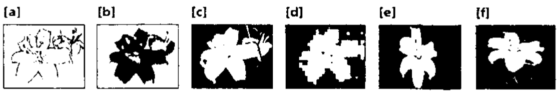
Notes on wide mode

- If wide mode is set to 16:9 FULL, the Steady Shot function does not work and the "✋" indicator flashes.
- When you record in 16:9 FULL mode, the date or time indicator will be widened on the wide-screen TV.
- If you dub a tape, the tape is copied in the same mode as the original recording.
- The wide mode is canceled automatically 5 minutes after you remove the power source.
- When recording, you cannot change the mode.

Enjoying picture effect

Selecting picture effect

You can make pictures like those of television with the Picture Effect function.



PASTEL [a]
Emphasize contrast and gives picture animation-like colors.

NEG. ART [b]
The color and brightness of the picture is reversed.

SEPIA
The picture is sepia.

B&W
The picture is monochrome (black and white).

SOLARIZE [c]
The light intensity is more clear, and the picture looks like an illustration.

MOSAIC [d]
The picture is mosic.

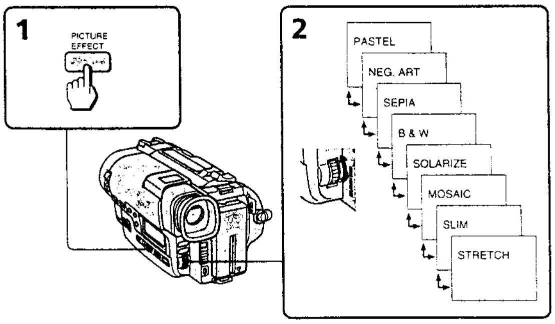
SLIM [e]
The picture expands vertically.

STRETCH [f]
The picture expands horizontally.

Using picture effect function

(1) Press PICTURE EFFECT.

(2) Turn the control dial to select the desired picture effect mode.



To turn off picture effect

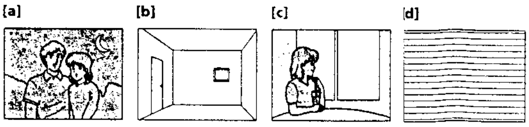
Press PICTURE EFFECT. The indicator in the viewfinder goes out.

Note on the picture effect
When you turn the power off, the camcorder returns automatically to normal mode.

Focusing manually

When to use manual focus

In the following cases you should obtain better results by adjusting the focus manually.



- Insufficient light **[a]**
- Subjects with little contrast — walls, sky, etc. **[b]**
- Too much brightness behind the subject **[c]**
- Horizontal stripes **[d]**
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

Focusing manually

Focusing manually

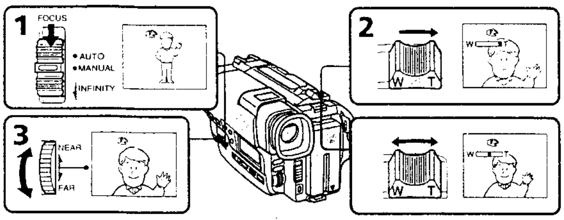
When focusing manually, first focus in telephoto before recording, and then reset the shot length.

(1) Set FOCUS to MANUAL. The Ⓕ indicator appears in the viewfinder.

(2) Move the power zoom lever to the "T" side until the lever reaches the end.

(3) Turn the NEAR/FAR dial to achieve a sharp focus. Be sure not to touch the built-in microphone when you turn the NEAR/FAR dial.

(4) Set the desired shot length using the power zoom lever.



To return to autofocus mode
Set FOCUS to AUTO. The Ⓕ indicator in the viewfinder disappears.

Shooting in relatively dark places
Shoot at wide-angle after focusing in the telephoto position.

To record a very distant subject
Push FOCUS down to INFINITY. The lens focuses on the most distant subject while FOCUS is held down. When it is released, manual focus mode is resumed. Use this function when shooting through a window or a screen, to focus on a most distant subject.

Note on manual focusing
The following indicators may appear:
▲: when recording a very distant subject.
●: when the subject is too close to focus on.

Using the PROGRAM AE function

Selecting the best mode

You can select one of six PROGRAM AE (Auto Exposure) modes to suit your shooting situation, referring to the following.

● Spotlight mode
For subjects in spotlight, such as at the theatre or a formal event.

Soft portrait mode
For zooming in on a still subject in telephoto mode, or for a subject behind an obstacle such as a screen. Creates a soft background for subjects such as people or flowers, and faithfully reproduces skin color.

Sports lesson mode
For recording fast-moving subjects such as in tennis or golf games.

Beach & ski mode
For people or faces in strong light or reflected light, such as at a beach in midsummer or on a snowy winter mountain.

Sunset & moon mode
For recording subjects in dark environnments such as sunsets, fireworks, neon signs, or general night views.

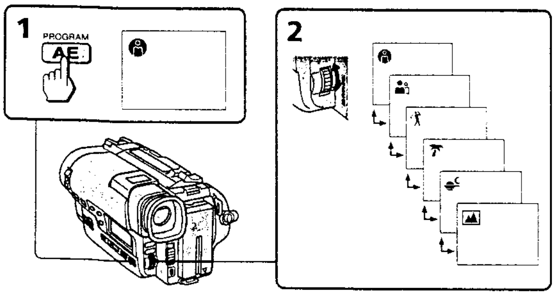
Landscape mode
For distant subjects such as mountains or when recording a subject behind an obstacle such as a window or screen.

Using the PROGRAM AE function

Using the PROGRAM AE function

(1) Press PROGRAM AE.

(2) Turn the control dial to select the desired PROGRAM AE mode.



To turn off program AE
Press PROGRAM AE.

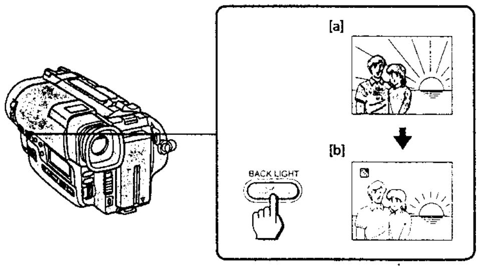
Notes on focus setting
- In the Spotlight, Sports lesson and Beach & Ski modes, you cannot take close-ups because the camcorder is set to focus only on subjects in the middle to far distance.
- In the Sunset & Moon and Landscape modes, the camcorder is set to focus only on distant subjects.

Note on PROGRAM AE
You can adjust the exposure while recording using PROGRAM AE mode

Shooting with backlighting

When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT function.

Press BACK LIGHT. The ▣ indicator appears in the viewfinder.



[a] Subject is too dark because of backlight.
[b] Subject becomes bright with backlight compensation.

After shooting
Be sure to release this adjustment condition by pressing BACK LIGHT again. The ▣ indicator disappears. Otherwise, the picture will be too bright under normal lighting condition.

This function is also effective under the following conditions:
- On snow, e.g. at a ski resort
- At the beach under strong sunshine
- A subject with a light source nearby or a mirror reflecting light
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

To make a fine adjustment
You can adjust the exposure manually. However, when you adjust the exposure manually, BACK LIGHT does not operate.

Adjusting the exposure

When to adjust the exposure

Adjust the exposure manually under the following cases.

[a]

[b]

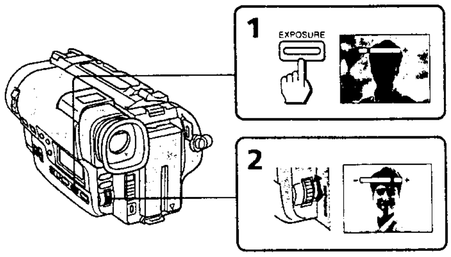
[a]
- The background is too bright (back lighting)
- Insufficient light: most of the picture is dark

[b]
- Bright subject and dark background
- To record the darkness faithfully

Adjusting the exposure

(1) Press EXPOSURE.

(2) Turn the control dial to adjust the brightness.



To return to automatic exposure mode

Press EXPOSURE again.

Shooting with the sun behind you

If the light source is behind your subject, or in the following situations, the subject will be recorded too dark.
- The subject is indoors and there is a window behind the subject.
- Bright light sources are included in the scene.
- When shooting a person wearing white or shiny clothes in front of a white background, the face will be recorded too dark.

Shooting in the dark

We recommend you to use a video light (not supplied). To get the best color, you must maintain a sufficient light level.

When you adjust the exposure manually
- BACK LIGHT does not appear.
- If you press PROGRAM AE, the camcorder automatically returns to automatic exposure mode.

Superimposing a title

You can select one of eight preset titles. You can also select the language, position, and color of titles in the menu system.

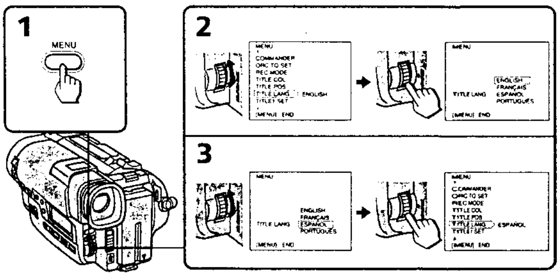
Selecting the language

(1) While the camcorder is in Standby mode, press MENU to display the menu.

(2) Turn the control dial to select TITLE LANG, then press the dial.

(3) Turn the control dial to select the desired language, then press the dial.

(4) Press MENU to erase the menu display.



Using titles

To add the title from the beginning

(1) While the camcorder is in Standby mode, press TITLE repeatedly until the desired title appears.
Each time a new title appears, it flashes. When the desired title appears, wait for it to stop flashing.

(2) Press START/STOP to start recording.

(3) When you want to stop recording the title, press TITLE.

To add the title while you are recording

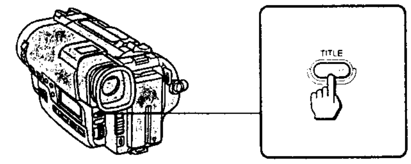
(1) While the camcorder is in Standby mode, press TITLE repeatedly until the desired title appears.
Each time a new title appears, it flashes.

(2) When the desired title appears, wait for it to stop flashing, and press TITLE again to erase the title from the display.

(3) Press START/STOP to start recording.

(4) When you reach the point where you want to add the title, press TITLE.

(5) When you want to stop recording the title, press TITLE again.



Titles cycle as follows:

Original title 1 → Original title 2 → HELLO! → HAPPY BIRTHDAY → HAPPY HOLIDAYS → CONGRATULATIONS! → OUR SWEET BABY → WEDDING → VACATION → THE END

After "THE END" the title indicator goes off once and returns to Original title 1 again. The titles are displayed in the language you selected in the menu system.

Notes on superimposing a title
- If you have not made any original titles, they are not displayed.
- You cannot select a title while you are recording.
- FADER does not work while the title is displayed.
- A title, a date and time cannot be recorded at the same time.
- When fading in or out you cannot display a title.
- If you display the menu while superimposing a title, the title is not recorded while the menu is being displayed.

To select the color of the title

(1) While the camcorder is in Standby mode, press MENU to display the menu.

(2) Turn the control dial to select TITLE COL, then press the dial.

(3) Turn the control dial to select the desired color, then press the dial.
You can choose from the following 7 colors:
WHITE ←→ YELLLOW ←→ VIOLET ←→ RED ←→ CYAN ←→ GREEN ←→ BLUE

(4) Press MENU to erase the menu display.

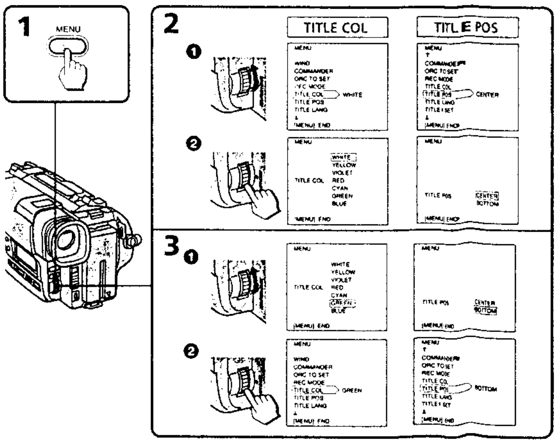
To select the position of the title

(1) While the camcorder is in Standby mode, press MENU to display the menu.

(2) Turn the control dial to select TITLE POS, then press the dial.

(3) Turn the control dial to select the desired position (CENTER or BOTTOM), then press the dial.

(4) Press MENU to erase the menu display.



Making your own titles

You can make up to two titles and store them in the camcorder. Eject the cassette before you begin. Your title can have up to 22 letters.

(1) While the camcorder is in Standby mode, press MENU to display the menu.

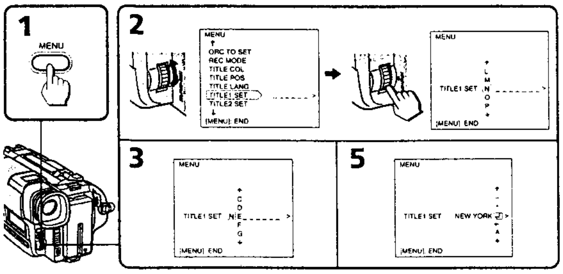
(2) Turn the control dial to select TITLE1 SET or TITLE2 SET, then press the dial.

(3) Turn the control dial to select the desired character, then press the dial.
To move the cursor to the character on the left side, select ←.

(4) Repeat step 3 until you finish the title.

(5) When you are finished, turn the control dial to select ↵ , then press the dial.

(6) Press MENU to erase the menu display.



To edit the title you have stored

In step 2, select TITLE 1 SET or TITLE 2 SET, whichever title you want to edit is stored in. Then change the title.

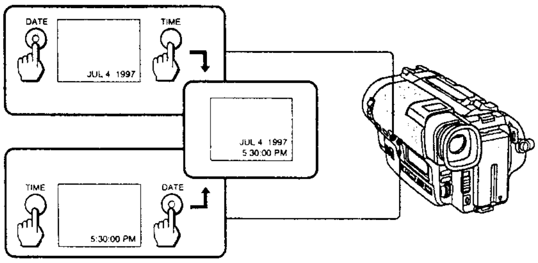
If you do nothing more than 5 minutes while a cassette is in the camcorder
The power goes off automatically. Turn STANDBY down once, turn it again up and proceed from step 1.

When you enter 22 letters in step 4
The title is stored automatically. (You do not need to got to step 5.)

To delete a title
At the leftmost character position, select ↵ and press the control dial. Do not erase the title by selecting empty spaces. If you do so, a title full of empty spaces is stored.

Recording with the date/time

Before you start recording or during recording, press DATE or TIME. You can record the date or time displayed in the viewfinder with the picture. Press DATE (or TIME), then press TIME (or DATE) to display date and time together.
The clock is already set to East Coast Standard Time at the factory. You can reset the clock in the menu system.



To stop recording with the date and/or time

Press DATE and/or TIME again. The date and/or time indicator disappears. The recording continues.

Note on the date or time indicator
If you press DATE or TIME while you are recording in CINEMA mode, the indicators in the viewfinder move upwards.

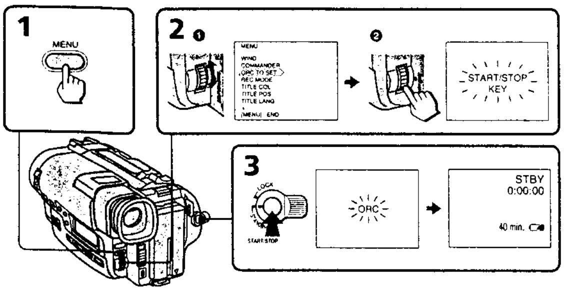
Optimizing the recording condition

Use this feature to check the tape condition before recording, so that you can get the best possible picture (ORC).

(1) While the camcorder is in Standby mode, press MENU to display the menu.

(2) Turn the control dial to select ORC TO SET, then press the dial.
"START/STOP KEY" starts flashing.

(3) Press START/STOP.
The ORC indicator starts flashing. The camcorder takes about 10 seconds to check the tape condition and then returns to Standby mode.



If the cassette has been ejected
Every time you eject the cassette, ORC is canceled. Set ORC again.

To check if you have performed ORC
If the ORC indicator lights up in the display window, the tape condition has been checked.

Notes on the ORC function
- When you set ORC TO SET, the recording on the tape is erased for about 0.1 second so that the camcorder can check the tape condition. Be careful when you use a recorded tape. The 0.1 second blank is erased if you record from the point where you set ORC TO SET for more than 2 seconds, or if you record over the blank.
- You cannot use this function on a tape with the red mark on the cassette exposed.
- While the ORC function is turned on, you cannot operate the power zoom lever.

Editing onto another tape

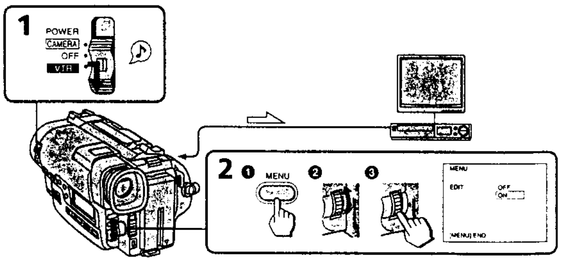
You can create your own video program by editing with any other 8 8 mm, Hi8 Hi8, VHS VHS, S-VHS S-VHS, VHSC VHSC, S-VHSC S-VHSC, β Betamax or ED Beta ED Betamax VCR that has video/audio inputs.

Before editing

Connect the camcorder to the VCR using the supplied A/V connecting cable.
Set the input selector on the VCR to LINE, if available.

(1) While pressing the small green button on the POWER switch, slide it to VTR.

(2) Set EDIT to ON in the menu system.



⇨ :Signal flow

Starting editing

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert your recorded tape into the camcorder.

(2) Play back the recorded tape on the camcorder until you locate the point where you want to start editing, then press ❚❚ to set the camcorder in playback pause mode.

(3) On the VCR, locate the recording start point and set the VCR in recording pause mode.

(4) Press ❚❚ on the camcorder and VCR simultaneously to start editing.

To edit more scenes

Repeat steps 2 to 4.

To stop editing

Press □ on both the camcorder and the VCR.

Note on the DISPLAY function
If you have displayed the viewfinder screen indicators on the TV, erase the indicators by pressing DISPLAY on the Remote Commander so that they will not be superimposed on the edited tape.

Note on Fine Synchro Edit
If you connect a video deck that has the Fine Synchro Edit feature to the LANC ⊄ jack of the camcorder, using a LANC cable (not supplied), the edit will be even more precise.

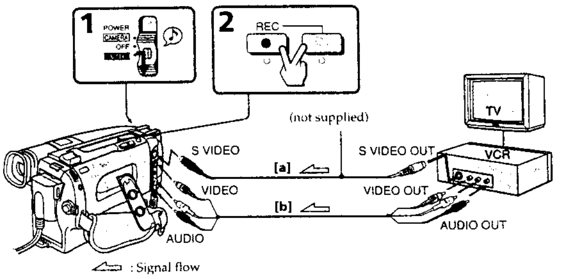
Recording from a VCR or TV

You can record a tape from another VCR or a TV program from a TV that has audio/video outputs. Connect the camcorder to the VCR or TV.

(1) While pressing the small green button on the POWER switch, slide it to VTR.

(2) Press REC ● and the button on the right together at the point where you want to start recording.

In recording and recording pause mode, S VIDEO and VIDEO/AUDIO jacks automatically work as input jacks.
If your VCR or TV has an S video jack, connect using the S video cable (not supplied) **[a]** to obtain a high quality picture.



If your VCR or TV is a monaural type, connect only the white plug for audio on both the camcorder and the VCR or TV.
If you are going to connect the camcorder using the S video cable (not supplied) **[a]**, you do not need to connect the yellow (video) plug of the A/V connecting cable **[b]**.

To check the picture from a VCR or TV before recording

Press **II** after pressing ●. You can check the picture in the viewfinder.

To stop recording

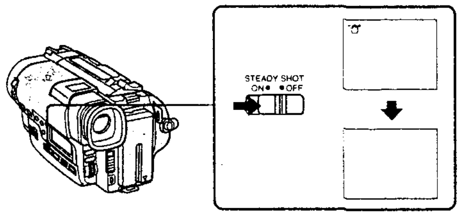
Press □.

Releasing the STEADY SHOT function

When you shoot, the indicator appears in the viewfinder. This indicates that the Steady Shot function is working and the camcorder compensates for camera-shake.

You can release the Steady Shot function when you do not need to use the Steady Shot function. Do not use the Steady Shot function when shooting a stationary object with a tripod.

Set STEADY SHOT to OFF. The indicator goes off.



To activate the Steady Shot function again

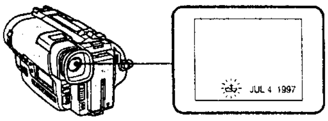
Set STEADY SHOT to ON. The indicator appears in the viewfinder.

Notes on the Steady Shot function
- The Steady Shot function will not correct excessive camera-shake.
- When you switch the Steady Shot function on or off, the exposure may fluctuate.
- Steady Shot does not operate when you select the 16:9 FULL mode. If you set STEADY SHOT to ON, the indicator flashes.

Additional Information

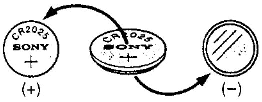
Changing the lithium battery in the camcorder

Your camcorder is supplied with a lithium battery installed. When the battery becomes weak or dead, the indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of any other battery may present a risk of fire or explosion.** Discard used batteries according to the manufacturer's instructions.
The lithium battery for the camcorder lasts for about 1 year under normal operation. (The lithium battery that comes installed at the factory may not last 1 year.)



Notes on lithium battery

- **Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.**
- Wipe the battery with a dry cloth to assure a good contact.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Note that the lithium battery has a positive (+) and a negative (–) side as illustrated. **Be sure to insert the lithium battery with the positive side facing out.**



WARNING
The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

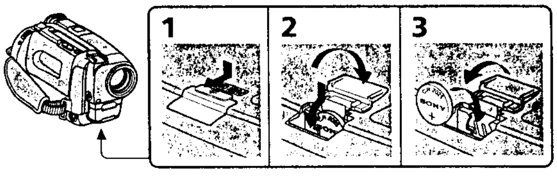
Changing the lithium battery

When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and other items in the menu system retained by the lithium battery.

(1) Open the lid of the lithium battery compartment.

(2) Push the lithium battery down once and pull it out from the holder.

(3) Install the lithium battery with the positive (+) side facing out. Close the lid.



Resetting the date and time

You can set the date and time in the menu system.

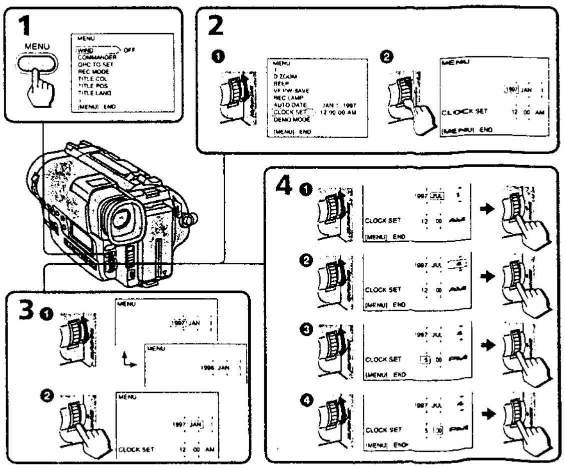
(1) Press MENU to display the menu in the viewfinder.

(2) Turn the control dial to select CLOCK SET, then press the dial.

(3) Turn the control dial to adjust the year, and then press the dial.

(4) Set the month, day, hour and minutes by turning the control dial and then pressing the dial.

(5) Press MENU to erase the menu display.



To correct the date and time setting

Repeat the above procedure.

To check the preset date and time

Press DATE to display the date indicator in the viewfinder.
Press TIME to display the time indicator.
When you press the same button again, the indicator goes off.

The year indicator changes as follows:

1997 ←→ 1998 ←→ ···· ←→ 2029

Note on the time indicator

The internal clock of this camcorder operates on a 12-hour cycle.

- 12:00 AM stands for midnight.
- 12:00 PM stands for noon.

Usable cassettes and playback modes

Selecting cassette types

This Hi8 system is an extension of the standard 8 mm system, and was developed for higher-quality pictures.
You can use Hi8 video and standard 8 mm cassettes. When you use a Hi8 video cassette, the recording is in the Hi8 system. When you use a standard 8mm cassette, the recording is in the standard 8 mm system. You cannot record on standard 8 mm cassettes in the Hi8 system.
If you are going to play back the tape using a standard 8mm video recorder/player, you should use standard 8 mm cassettes.

When you play back

The playback mode (SP/LP) and system (Hi8/standard 8 mm) are selected automatically according to the format in which the tape has been recorded. The quality of the recorded picture in LP mode, however, will not be as good as that in SP mode.

Note on AFM HiFi stereo

When you play back a tape, the sound will be in monaural if:

- You record the tape using this camcorder, then play it back on an AFM HiFi monaural video recorder/player.
- You record the tape on an AFM HiFi monaural video recorder, then play it back on this camcorder.

Foreign 8 mm video

Because the TV color systems differ from country to country, you may not be able to play back foreign pre-recorded tapes. Refer to the list of "Using your camcorder abroad" to check the TV color system of foreign countries.

Tips for using the battery pack

This section shows you how you can get the most out of your battery pack.

Preparing the battery pack

Always carry additional batteries

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery life is shorter in a cold environment

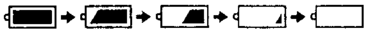
Battery efficiency is decreased, and the battery will be used up more quickly, if you are recording in a cold environment.

To save battery power

Turn STANDBY down when not recording to save battery power.
A smooth transition between scenes can be made even if recording is stopped and started again. While you are positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.

When to replace the battery pack

While you are using your camcorder, the remaining battery indicator in the viewfinder decreases gradually as battery power is used up. The remaining time in minutes also appears.



When the remaining battery indicator reaches the lowest point, the ▭ indicator appears and starts flashing in the viewfinder.
When the ▭ indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, slide the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain a smooth transition between scenes after the battery pack has been replaced.

Notes on the rechargeable battery pack

Caution

Never leave the battery pack in temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight.

The battery pack heats up

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern and is normal.

Battery pack care

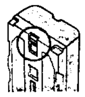
- **Remove the battery pack from the camcorder after using it,** and keep it in a cool place. When the battery pack is installed to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF. This shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery pack right before using the camcorder.

Be sure to observe the following

- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor try to disassemble the battery pack.
- Do not expose the battery pack to any mechanical shock.

The switch on the battery pack

When the switch is supplied with the battery pack you can use it to find whether the battery pack is charged or not. Set the switch to the "green mark" position when charging is completed. (When removed from the charging adaptor, the switch exposes the green mark. When removed from your camcorder, no mark is indicated.)



The life of the battery pack

If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging temperature

You should charge batteries at temperatures from 50°F to 86°F (from 10°C to 30°C). Lower temperatures require a longer charging time.

Notes on the "InfoLITHIUM" battery pack

What is the "InfoLITHIUM"

The "InfoLITHIUM" is a lithium ion battery pack which can exchange data with compatible video equipment about its battery consumption. Sony recommends that you use the "InfoLITHIUM" battery pack with video equipment having the ⓘInfoLITHIUM mark.
When you use this battery pack with video equipment having the ⓘInfoLITHIUM mark, the video equipment will indicate the remaining battery time in minutes*. However, if you use it with video equipment not having this mark, the remaining battery capacity will not be indicated in minutes.

- The indication may not be accurate depending on the condition and environment which the equipment is used under.

How the battery consumption is displayed

The power consumption of the camcorder changes depending on its use, such as how the autofocusing is working.
While checking the condition of the camcorder, the "InfoLITHIUM" battery pack measures the battery consumption and calculates the remaining battery power. If the condition changed drastically, the remaining battery indication may suddenly decrease or increase by more than 2 minutes.
Even if 5 to 10 minutes is indicated as the battery remaining time in the viewfinder, the ▭ indicator may also flash under some condition.

To obtain more accurate remaining battery indication

Set the camcorder to recording standby mode and point towards a stationary object. Do not move the camcorder for 30 seconds or more.

- If the indication seems incorrect, use up the battery pack and then recharge it fully (Full charge[1]). Note that if you have used the battery in a hot or cold environment for long time, or you have repeated charging many times, the battery pack may not be able to show the correct time even after being fully charged.
- After you have used the "InfoLITHIUM" battery pack with an equipment not having the ⓘInfoLITHIUM mark, make sure that you use up the battery pack on the equipment having the ⓘInfoLITHIUM mark and then recharge fully.

Why the remaining battery indication does not match the continuous recording time in the operation manual

The recording time is affected by the environmental temperature and conditions. The recording time becomes very short in a cold environment. The continuous recording time in the operation manual is measured under the condition of using a fully charged (or normal charged[2]) battery pack in 77°F (25°C). As the environmental temperature and condition are different when you actually use the camcorder, the remaining battery time is not same as the continuous recording time in the operation manual.

[1] Full charge: Charging for about 1 hour after the CHARGE lamp of the AC power adaptor goes off.

[2] Normal charge: Charging just until the CHARGE lamp of the AC power adaptor goes off.

Notes on charging

A brand-new battery pack

A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

Recharge the battery pack whenever you like

You do not have to discharge it before recharging. If you charged the battery pack fully but you did not use it for a long time, it becomes discharged. Then recharge the battery pack before use.

Notes on the terminals

If the terminals (metal parts on the back) are not clean, the battery charge duration will be shortened.

When the terminals are not clean or when the battery pack has not been used for a long time, repeatedly install and remove the battery pack a few times. This improves the contact condition. Also, wipe the + and – terminals with a soft cloth or paper.

Notes on the battery case

- **Use only with alkaline batteries. You cannot use the battery case with manganese batteries or size AA (LR6) rechargeable NiCd batteries.**
- **Using with Sony alkaline batteries is preferable.**
- Battery life is remarkably shorter in a cold environment (lower than 50°F/10°C).
- Keep the metal part clean. If it gets dirty, wipe it with a soft cloth.
- Do not disassemble or convert the battery case.
- Do not expose the battery case to any mechanical shock.
- During recording, the battery case heats up. This is not cause for concern.
- Prevent the electrode in the battery case from coming in contact with a metal object.
- If you will not use the battery case for a long time, detach the battery case from the camcorder and remove the batteries from the battery case.

If battery leakage occurred

- Wipe off the liquid in the battery case carefully before replacing the batteries.
- If you touch the liquid, wash it off with water.
- If the liquid get into your eyes, wash your eyes with a lot of water and then consult a doctor.

Maintenance information and precautions

Moisture condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. Please, take the following precautions.

Inside the camcorder

If there is moisture inside the camcorder, the beep sounds and the ▣ indicator flashes. If this happens, none of the functions except cassette ejection will work. Open the cassette compartment, turn off the camcorder, and leave it about 1 hour. When ⏏ indicator flashes at the same time, the cassette is inserted in the camcorder. Eject the cassette, turn off the camcorder, and leave also the cassette about 1 hour. The camcorder can be used again if the ▣ indicator does not appear when the power is turned on again.

On the lens

If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to prevent moisture condensation

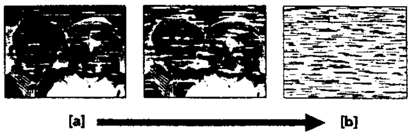
When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder.

(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

Video head cleaning

To ensure normal recording and clear pictures, clean the video heads. When the ⊗ indicator and "▲ CLEANING CASSETTE" message appear one after another in the viewfinder or playback pictures are "noisy" or hardly visible, the video heads may be dirty.



[a] Slightly dirty
[b] Very dirty

If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy," repeat the cleaning. (Do not repeat cleaning more than 5 times in one session.)

Caution

Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note

If the Sony V8-25CLH cleaning cassette is not available in your area, consult your nearest Sony dealer.

Precautions

Camcorder operation

- Operate the camcorder on 7.2 V (battery pack) or 8.4 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid get inside the casing, unplug the camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.

On handling tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type of tape, thickness of tape and if the recording tab is in or out.

Camcorder care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or in a dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction, and sometimes this malfunction cannot be repaired.

AC power adaptor

Charging

- Use only a lithium ion type battery pack.
- Place the battery pack on a flat surface without vibration during charging.
- The battery pack will get hot during charging. This is normal.

Others

- Unplug the unit from the wall outlet when not in use for a long time. To disconnect the power cord, pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the AC power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

Notes on dry batteries

To avoid possible damage from battery leakage or corrosion, observe the following.

- Be sure to insert the batteries in the correct direction.
- Dry batteries are not rechargeable.
- Do not use a combination of new and old batteries.
- Do not use different types of batteries.
- The batteries slowly discharge while not in use.
- Do not use a battery that is leaking.

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

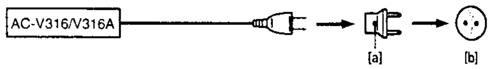
Using your camcorder abroad

Each country or area has its own electric and TV color systems. Before using your camcorder abroad, check the following points.

Power sources

You can use your camcorder in any country or area with the supplied AC power adaptor within 110 V to 240 V AC, 50/60 Hz.

Use a commercially available adaptor **[a]**, if necessary, depending on the design of the wall outlet **[b]**.



Difference in color systems

This camcorder is an NTSC system-based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system-based TV.
Check the following list.

NTSC system
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system
Australia, Austria, Belgium, China, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system
Brazil

PAL-N system
Argentina, Paraguay, Uruguay

SECAM system
Bulgaria, Czech Republic, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Slovak Republic, Ukraine, etc.

Trouble check

If you run into any problem using the camcorder, use the following table to troubleshoot the problem. Should the difficulty persist, disconnect the power source and contact your Sony dealer or local authorized Sony service facility.

Camcorder

Power

Symptom	Cause and/or Corrective Action
The power is not on.	• The battery pack is not installed. → Install the battery pack. (p. 8) • The battery is dead. → Use a charged battery pack. (p. 6) • The AC power adaptor is not connected to a wall outlet. → Connect the AC power adaptor to a wall outlet. (p. 22) • You use other types of battery except an "InfoLITHIUM" battery pack. → Use an "InfoLITHIUM" battery pack (p. 6)
The power goes off.	• While being operated in CAMERA mode, the camcorder has been in Standby mode for more than 5 minutes. → Turn STANDBY down once and then up again. (p. 12) • The battery is dead. → Use a charged battery pack. (p. 6) • If VF PW-SAVE is set to ON, the picture disappears automatically when you turn your face away from the viewfinder. → Bring your face close to the viewfinder within 1/2 inch (1 cm). Or set VF PW-SAVE to OFF. (p. 25)
The battery pack is quickly discharged.	• The ambient temperature is too low. (p. 49) • The battery pack has not been charged fully. → Charge the battery pack again. (p. 6) • The battery pack is completely dead, and cannot be recharged. → Use another battery pack. (p. 8) • You use other types of battery except an "InfoLITHIUM" battery pack. → Use an "InfoLITHIUM" battery pack (p. 6)
The beep sounds when the battery is attached.	• The battery pack is discharged during a long period of storage. → Charge the battery pack again. (p.6)
When you turn off the power, the lens makes a noise.	• The camcorder is not malfunctioning.

Operation

Symptom	Cause and/or Corrective Action
START/STOP does not operate.	• The tape is stuck to the drum. → Eject the tape. (p. 10) • The tape has run out. → Rewind the tape or use a new one. (p. 20) • The POWER switch is set to VTR. → Set it to CAMERA. (p. 11) • The tab on the cassette is out (red). → Use a new tape or slide the tab. (p.10)

Trouble check

Symptom	Cause and/or Corrective Action
Recording stops in a few seconds.	• The START/STOP MODE switch is set to 5 SEC or ANTI GROUND SHOOTING ⊥ . → Set it to ⊻ . (p. 15)
The cassette cannot be removed from the holder.	• The battery is dead. → Use a charged battery pack or the AC power adaptor. (p. 6, 22)
▣ and ⏏ indicators flash and no function except for cassette ejection works.	• Moisture condensation has occurred. → Remove the cassette and leave the camcorder for at least 1 hour. (p. 52)
The counter, date or time indicator is flashing.	• You pressed DATE and TIME together for more than 2 seconds. → The camcorder is not malfunctioning. You may start recording. Flashing will stop soon. • The lithium battery is weak or dead. → Replace the lithium battery with a new one. (p. 46)
The tape does not move when a video control button is pressed.	• The POWER switch is set to CAMERA or OFF. → Set it to VTR. • The tape has run out. → Rewind the tape or use a new one. (p. 20)
The SteadyShot function does not activate.	• STEADY SHOT is set to OFF. → Set STEADY SHOT to ON. (p. 45) • The SteadyShot function does not work when the wide mode is set to 16:9 FULL.
The autofocusing function does not work.	• FOCUS is set to MANUAL. → Set it to AUTO. (p. 31) • Shooting conditions are not suitable for autofocus. → Set FOCUS to MANUAL to focus manually. (p. 31)
The fader function does not activate.	• START/STOP MODE is set to 5 SEC or ANTI GROUND SHOOTING ⊥ . → Set it to ⊻ . (p. 15) • A title is displayed. → Stop superimposing the title.
No sound or only a low sound is heard when playing back a tape.	• The stereo tape is played back with HiFi SOUND set to 1 or 2 in the menu system. → Set to STEREO in the menu system. (p. 26)
Excessive high-pitched sound is heard.	• The picture has been recorded with WIND set to ON in the menu system. → When there is no wind, set it to OFF. (p. 25)
The date or time indicator disappears.	• Reset the date and time. (p. 47)

(to be continued)

Trouble check

Picture

Symptom	Cause and/or Corrective Action
The image on the viewfinder screen is not clear.	• The viewfinder lens is not adjusted. → Adjust the viewfinder lens. (p. 12)
A vertical band appears when a subject such as lights or a candle flame is shot against a dark background.	• The contrast between the subject and background is too high. The camcorder is not malfunctioning. → Change locations.
A vertical band appears when shooting a very bright subject.	• The camcorder is not malfunctioning.
The playback picture is not clear.	• EDIT is set to ON in the menu system. → Set it to OFF. (p. 26)
The picture is "noisy".	• The video heads may be dirty. → Clean the heads using the Sony V8-25CLH cleaning cassette (not supplied). (p. 53)
The picture does not appear in the viewfinder.	• If VF PW-SAVE is set to ON, the picture disappears automatically when you turn your face away from the viewfinder. → Bring your face close to the viewfinder within 1/2 inch (1 cm). Or set VF PW-SAVE to OFF. (p. 25)
The picture in the viewfinder does not disappear even if VF PW-SAVE is set to ON.	• Sunlight or an incandescent lamp may prevent the viewfinder sensor from working correctly. This is not a malfunction.
An unknown picture is displayed in the viewfinder.	• If 10 minutes elapse after you set the POWER switch to CAMERA without inserting a cassette, the camcorder automatically starts the demonstration or DEMO is set to ON in the menu system. → Insert the cassette and the demonstration stops. You can make the demonstration not appear. (p. 26)
The five digit code appears.	• The self-diagnosis function is activated. → Check the code and solve the problem. (p. 60)

Others

Symptom	Cause and/or Corrective Action
The supplied Remote Commander does not work.	• COMMANDER is set to OFF in the menu system. → Set it to ON. (p. 67) • Something is blocking the infrared rays. → Remove the obstacle. • The batteries are not inserted with the correct polarity. → Insert the batteries with the correct polarity. (p. 67) • The batteries are dead. → Insert new ones. (p. 67)

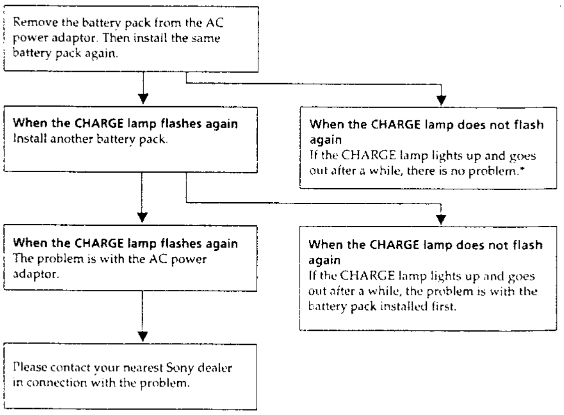
Trouble check

AC power adaptor

Symptom	Corrective Actions
The VTR/CAMERA or CHARGE lamp does not light.	• Disconnect the power cord. After about 1 minute, reconnect the power cord.
The CHARGE lamp flashes.	• See the following chart.

When the CHARGE lamp flashes

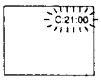
Check through the following chart.


Remove the battery pack from the AC power adaptor. Then install the same battery pack again.
When the CHARGE lamp flashes again
Install another battery pack.
When the CHARGE lamp does not flash again
If the CHARGE lamp lights up and goes out after a while, there is no problem.*
When the CHARGE lamp flashes again
The problem is with the AC power adaptor.
When the CHARGE lamp does not flash again
If the CHARGE lamp lights up and goes out after a while, the problem is with the battery pack installed first.
Please contact your nearest Sony dealer in connection with the problem.

* If you use a battery pack which you have just bought or which has been left unused for a long time, the CHARGE lamp may flash at the first charging. This does not indicate a problem. Repeat again to charge with the same battery pack.

Self-diagnosis function

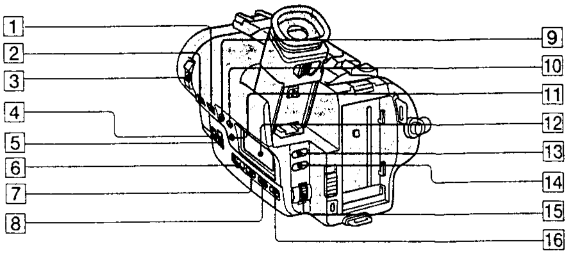
If the self-diagnosis function is activated to prevent the camcorder from operating abnormally, the five digit service number (combination of an alphabet and figures) flashes in the viewfinder or display window. In this case, check the following table.



First three digits	Cause and/or Corrective Action
C21	• Moisture condensation has occurred. → Remove the cassette and leave the camcorder for at least 1 hour. (p. 52)
C22	• The video heads are dirty. → Clean the heads using the Sony V8-25 CLH cleaning cassette (not supplied). (p. 53)
C23	• The camcorder does not operate when using a battery that is not an InfoLITHIUM battery. → Use an InfoLITHIUM battery. (p. 6)
C31	• To prevent the camcorder from operating abnormally, the self-diagnosis function has come on. → Remove the cassette and insert it again, and then operate the camcorder. (p. 10)
C32	• To prevent the camcorder from operating abnormally, the self-diagnosis function has come on. → Disconnect the power cord of the AC power adaptor or remove the battery pack. After reconnecting or reattaching the power source, operate the camcorder.
E61 E62	• To prevent the camcorder from operating abnormally, the self-diagnosis function has come on. → When you contact your local authorized Sony service facility, inform the service number with five digits. (example: E:61:10)

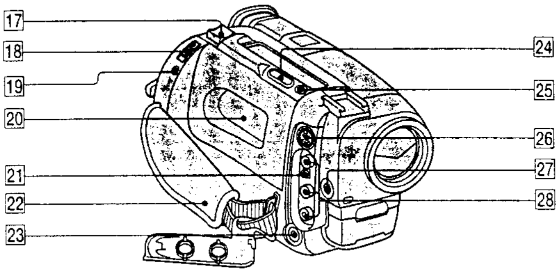
If a difficulty persists after checking the problem a few times, contact your local authorized Sony service facility.

Identifying the parts



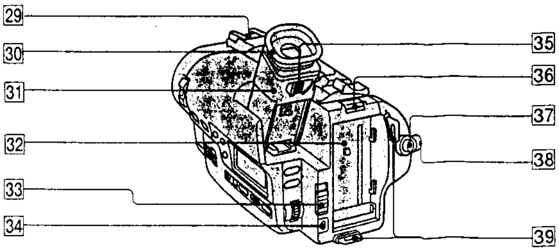
1. **BACKLIGHT button** (p.35)
2. **FADER button** (p.27)
3. **POWER switch** (p.11)
4. **NEAR/FAR dial** (p.32)
5. **FOCUS switch** (p.32)
6. **STEADY SHOT switch** (p.45)
7. **PICTURE EFFECT button** (p.29)
8. **EXPOSURE button** (p.35)
9. **DATE button** (p.41)
10. **TIME button** (p.41)
11. **COUNTER RESET button** (p.13)
12. **Display window** (p.69)
13. **TITLE button** (p.38)
14. **MENU button** (p.24)
15. **CONTROL dial** (p.24)
16. **PROGRAM AE button** (p.33)

Identifying the Parts



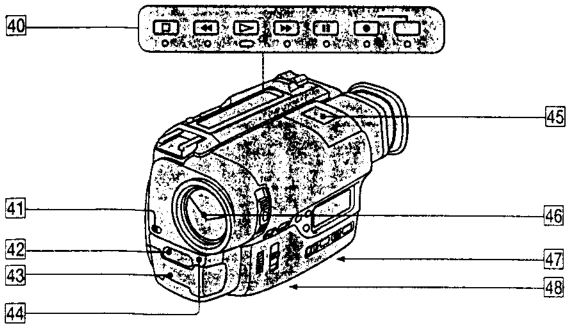
17. **Power zoom lever** (p.14)
18. **EJECT switch** (p.10)
19. **LANC ⓛ control jack**
    ⓛ stands for Local Application Control Bus System. The ⓛ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.
20. **Cassette compartment** (p.10)
21. **RFU DC OUT (RFU adaptor DC output) jack** (p.18)
22. **Grip strap** (p.16)
23. **∩ (headphones) jack** (p.20)
24. **EDITSEARCH button** (p.17)
25. **LASER LINK button** (p.19)
26. **S VIDEO jack** (p.18, 44)
27. **MIC jack (PLUG IN POWER)**
    Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone.
28. **VIDEO/AUDIO jacks** (p.18, 44)

Identifying the Parts



29. **Intelligent accessory shoe**
    The intelligent accessory shoe supplies power to optional accessories such as a video light.
30. **Eyecup** (p.16)
31. **Viewfinder** (p.12, 16)
32. **Battery mounting surface**
33. **START/STOP MODE switch** (p.15)
34. **16:9 WIDE button** (p.28)
35. **Viewfinder lens adjustment lever** (p.12)
36. **BATT (battery) PUSH button** (p.8)
37. **START/STOP button** (p.11)
38. **STANDBY switch** (p.11)
39. **Hooks for shoulder strap** (p.68)

Note on the intelligent accessory shoe
Supplies power to optional accessories such as a video light or microphone. The intelligent accessory shoe is linked to the STANDBY switch, allowing you to turn on and off the power supplied by the shoe. Refer to the instruction manual of the accessory for further information. To connect an accessory, press down and push it to the end, and then tighten the screw. To remove an accessory, loosen the screw, and then press down and pull out the accessory.



- 40 **Video control buttons** (p.20)
  - □ STOP (stop)
  - ◄◄ REW (rewind)
  - ▷ PLAY (playback)
  - ►► FF (fastforward)
  - II PAUSE (pause)
  - ● REC (recording)
- 41 **Camera recording/battery lamp** (p.11)
- 42 **IR transmitter** (p.19)
- 43 **Microphone**
- 44 **Remote sensor** (p.68)
  Aim the Remote Commander here for remote control.
- 45 **Lighting aperture** (p.12)
- 46 **Lens cover**
- 47 **Lithium battery compartment** (p.46)
- 48 **Tripod receptacle** (p.16)
  Make sure that the length of the tripod screw is less than 9/32 inch (6.5 mm) otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.

To watch the demonstration

You can start the demonstration by setting DEMO MODE in the menu system.
You can also start the demonstration by the following operation.

To enter demo mode

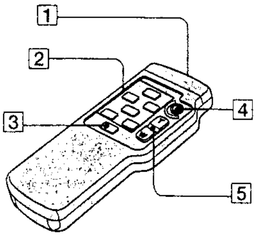
(1) Eject the cassette and set the POWER switch to VTR.
(2) Turn STANDBY up.
(3) While holding down ▷ set the POWER switch to CAMERA.

To exit demo mode

(1) Set the POWER switch to VTR.
(2) Turn STANDBY up.
(3) While holding down □ set the POWER switch to CAMERA.

Remote Commander

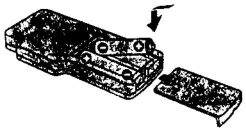
The buttons that have the same name on the Remote Commander as on the camcorder function identically.



- 1 **Transmitter**
  Point toward the remote sensor to control the camcorder after turning on the camcorder.
- 2 **Tape transport buttons** (p.20)
- 3 **DISPLAY button** (p.20)
- 4 **START/STOP button** (p.11)
- 5 **Power zoom button** (p.14)

To prepare the Remote Commander

Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.

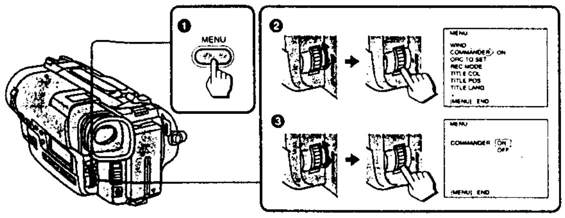


Note on battery life
The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote Commander does not work.

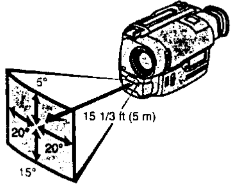
To avoid damage from possible battery leakage
Remove the batteries when you will not use the Remote Commander for a long time.

To use the Remote Commander

Make sure that the COMMANDER is set to ON in the menu system on the camcorder.



Remote control direction

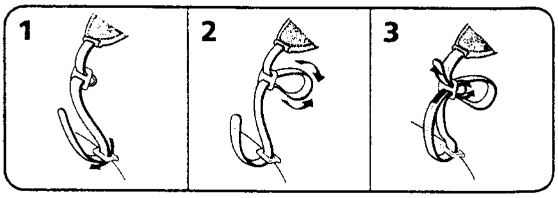


Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor on the camcorder and the Remote Commander.
- This camcorder works in commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

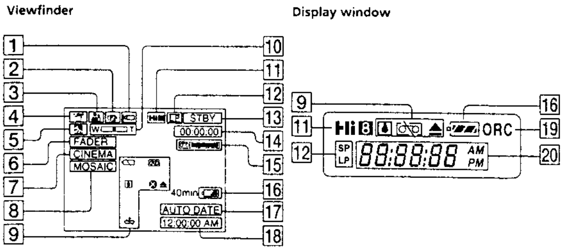
Attaching the shoulder strap

Attach the supplied shoulder strap to the hooks for the shoulder strap .



Identifying the parts

Operation indicators


Viewfinder
Display window
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
STBY
00:00:00
FADER
CINEMA
MOSAIC
40min
AUTO DATE
12:00:00 AM
9
11
12
16
19
20
Hi8
ORC
SP
LP
88:88:88
AM
PM

1 **WIND indicator** (p.25)

2 **Manual focusing** (p.32)

3 **PROGRAM AE indicator** (p.33)

4 **SteadyShot indicator** (p.45)

5 **Backlight indicator** (p.35)

6 **FADER indicator** (p.27)

7 **Wide mode indicator** (p.28)

8 **Picture effect indicator** (p.29)

9 **Warning indicators** (p.70)

10 **Exposure indicator/Zoom indicator** (p.14, 35)

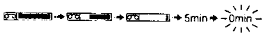
11 **Playing back or recording in Hi8 format** (p.48)

12 **Recording mode indicator** (p.48)

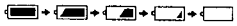
13 **Video control mode** (p.20)

14 **Tape counter** (p.13)
Self-diagnosis indicator (p.60)

15 **Remaining tape indicator**



16 **Remaining battery indicator** (p.49)



17 **AUTO DATE indicator** (p.11)

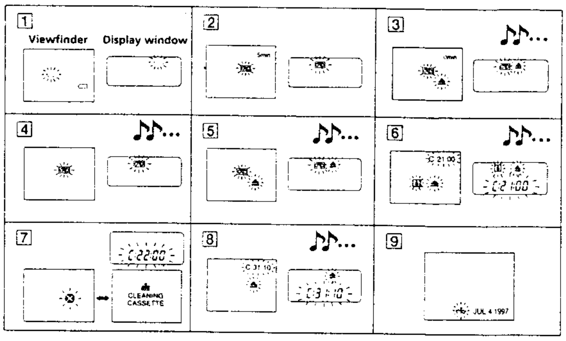
18 **Date or Time indicator** (p.41)

19 **ORC indicator** (p.42)

20 **Date or Time indicator** (p.41)/
Tape counter (p.13)/
Self-diagnosis indicator (p.60)

Warning indicators

If indicators flash in the viewfinder or in the display window, check the following:
♪: you can hear the beep sound when the BEEP is set to ON.


1
Viewfinder
Display window
2
5min
3
0min
4
5
6
C:21:00
C:21:00
7
C:22:00
CLEANING CASSETTE
8
C:31:10
C:31:10
9
JUL 4 1997

1 **The battery is weak or dead.**
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 **The tape is near the end.**
The flashing is slow.

3 **The tape has run out.**
The flashing becomes rapid.

4 **No tape has been inserted.**

5 **The tab on the tape is out (red).**

6 **Moisture condensation has occurred.** (p.52)

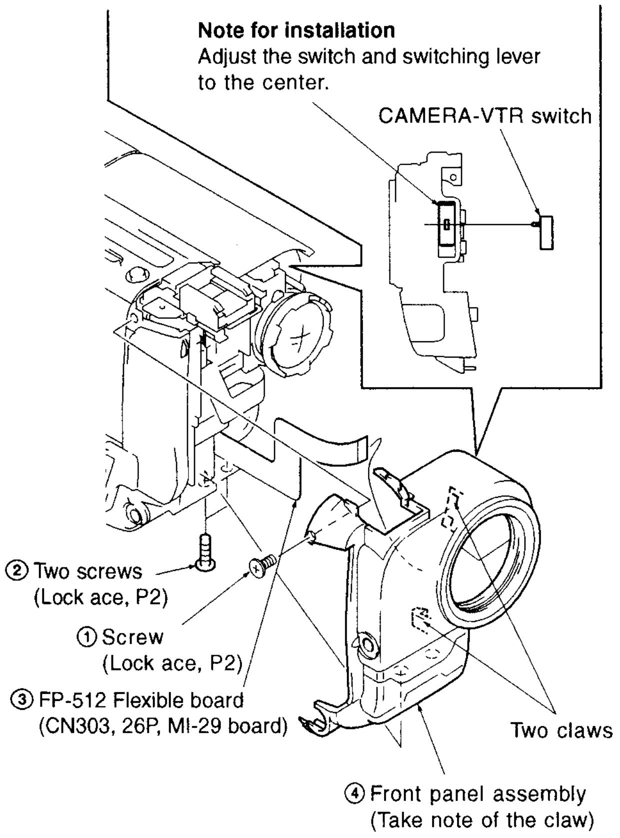
7 **The video heads may be contaminated.** (p.53)

8 **Some other trouble has occurred.**
Use the self-diagnosis function (p.60).
If the display does not disappear contact your Sony dealer or local authorized Sony service facility.

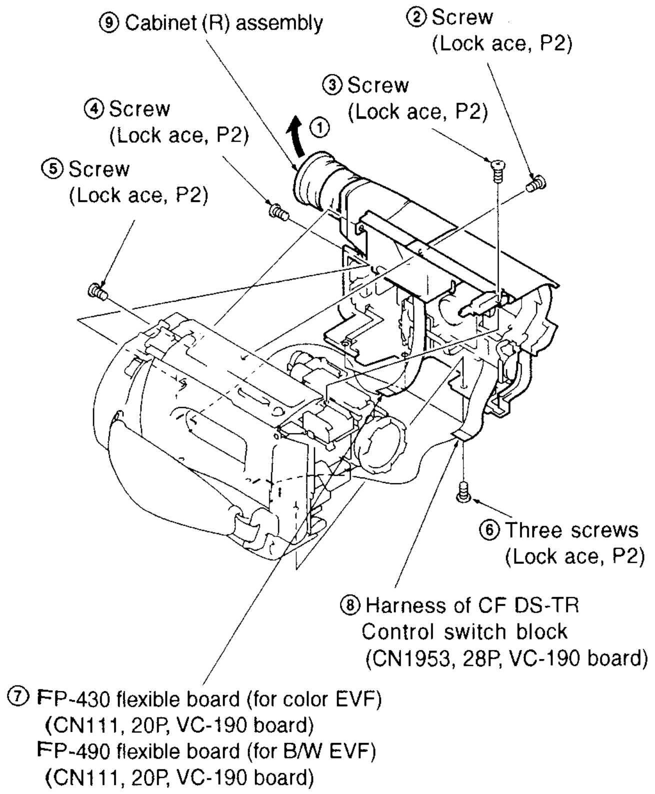
9 **The lithium battery is weak or is not installed.** (p.46)

SECTION 2
DISASSEMBLY

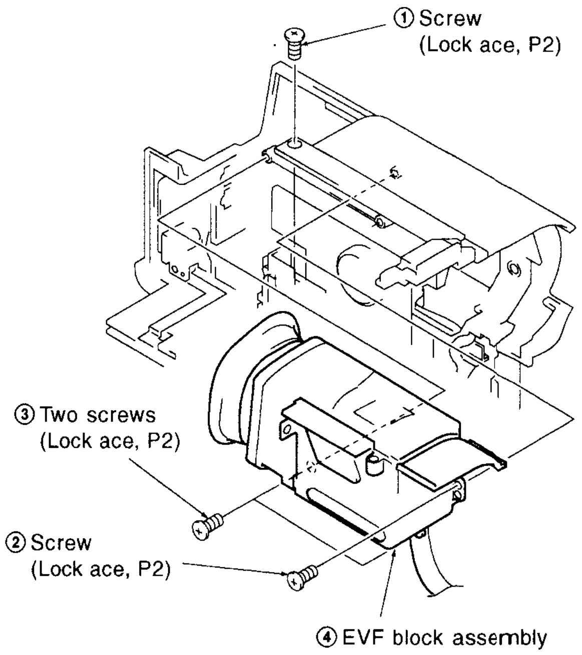
2-1. REMOVAL OF FRONT PANEL ASSEMBLY


Note for installation
Adjust the switch and switching lever to the center.
CAMERA-VTR switch
② Two screws (Lock ace, P2)
① Screw (Lock ace, P2)
③ FP-512 Flexible board (CN303, 26P, MI-29 board)
Two claws
④ Front panel assembly (Take note of the claw)

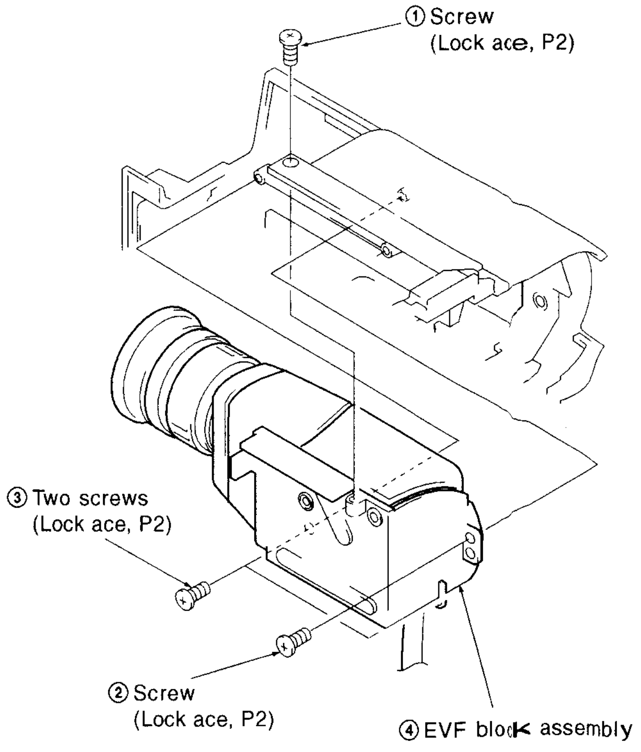
2-2. REMOVAL OF CABINET (R) ASSEMBLY


⑨ Cabinet (R) assembly
② Screw (Lock ace, P2)
③ Screw (Lock ace, P2)
④ Screw (Lock ace, P2)
①
⑤ Screw (Lock ace, P2)
⑥ Three screws (Lock ace, P2)
⑧ Harness of CF DS-TR Control switch block (CN1953, 28P, VC-190 board)
⑦ FP-430 flexible board (for color EVF) (CN111, 20P, VC-190 board)
FP-490 flexible board (for B/W EVF) (CN111, 20P, VC-190 board)

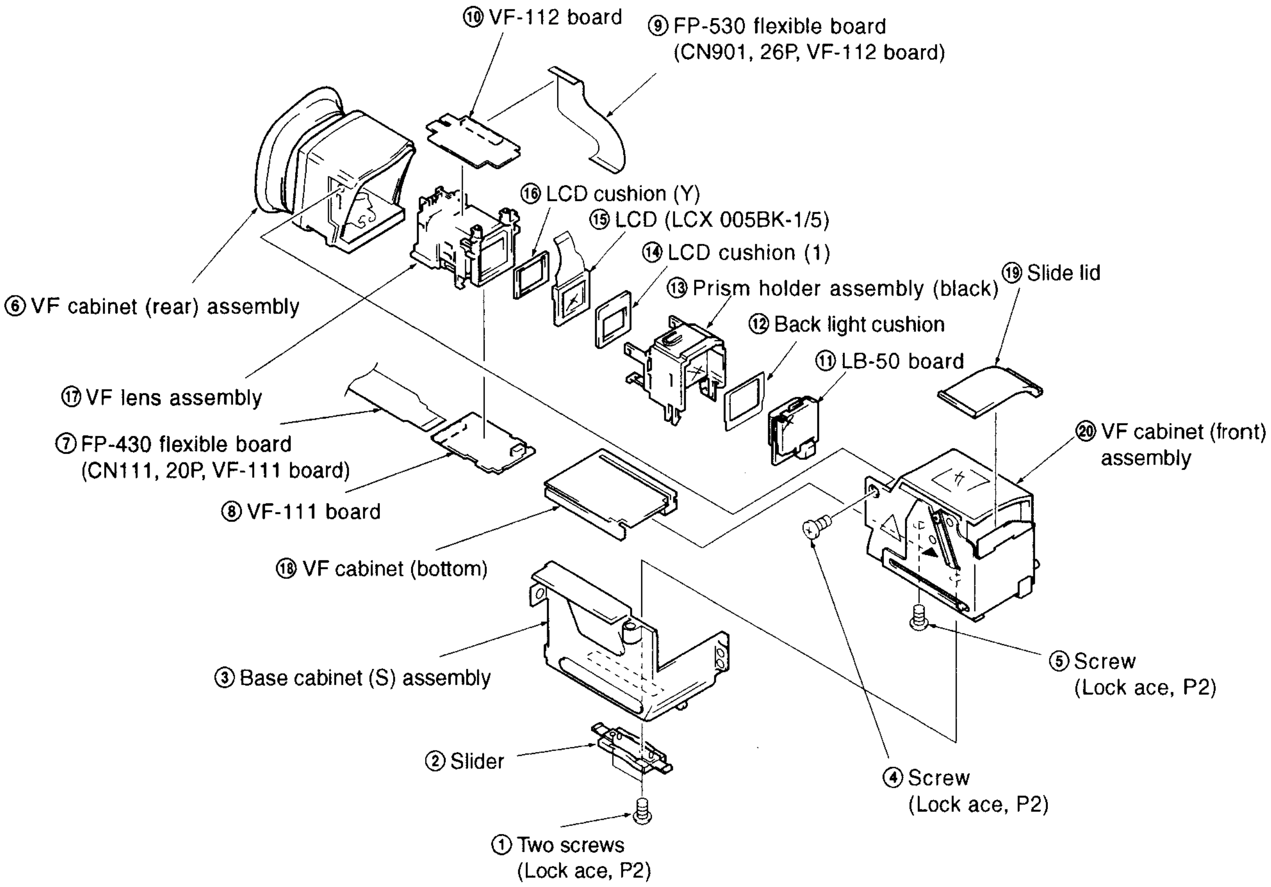
2-3. REMOVAL OF EVF BLOCK ASSEMBLY (1) (COLOR)


① Screw (Lock ace, P2)
③ Two screws (Lock ace, P2)
② Screw (Lock ace, P2)
④ EVF block assembly

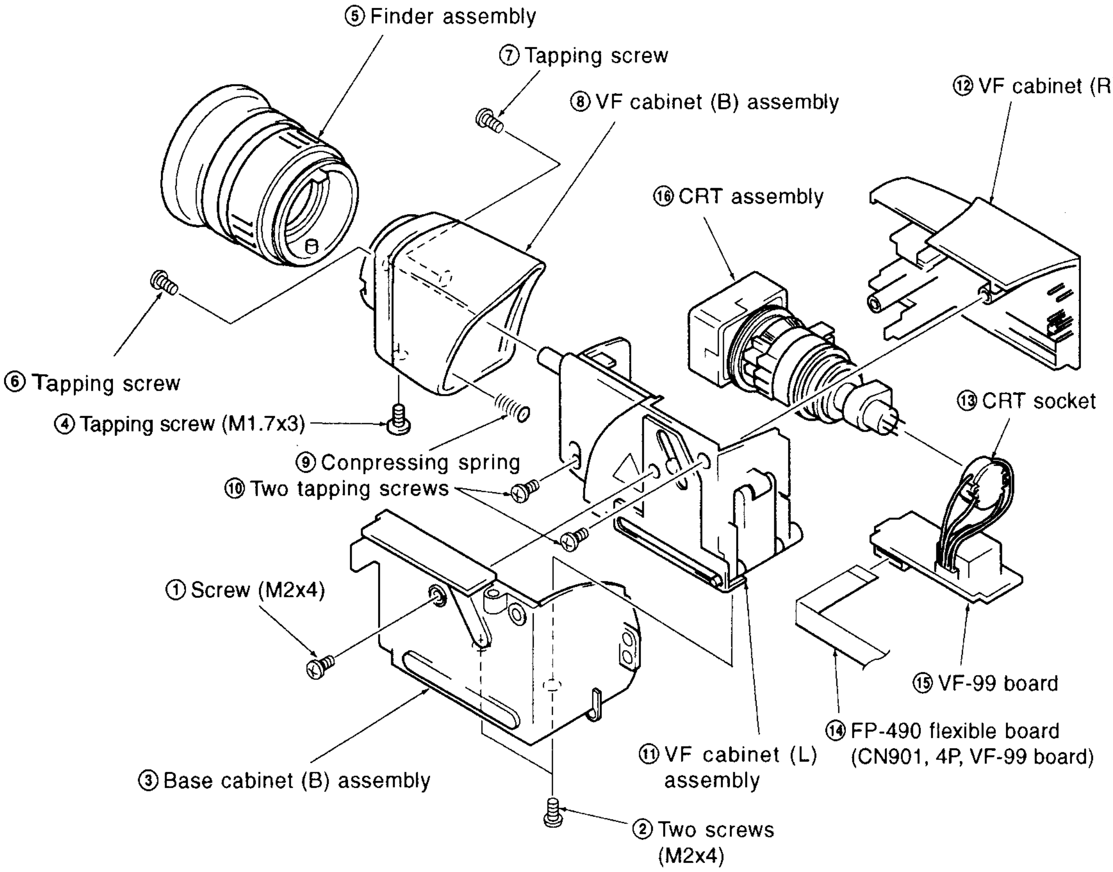
2-4. REMOVAL OF EVF BLOCK ASSEMBLY (1) (B/W)


① Screw (Lock ace, P2)
③ Two screws (Lock ace, P2)
② Screw (Lock ace, P2)
④ EVF block assembly

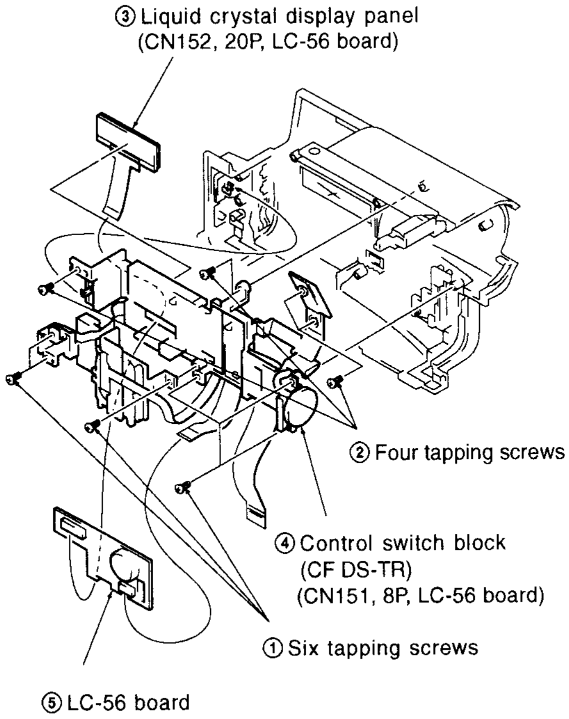
2-5. REMOVAL OF EVF BLOCK ASSEMBLY (2) (COLOR)


⑩ VF-112 board
⑨ FP-530 flexible board
(CN901, 26P, VF-112 board)
⑯ LCD cushion (Y)
⑮ LCD (LCX 005BK-1/5)
⑭ LCD cushion (1)
⑬ Prism holder assembly (black)
⑲ Slide lid
⑥ VF cabinet (rear) assembly
⑫ Back light cushion
⑪ LB-50 board
⑰ VF lens assembly
⑳ VF cabinet (front)
assembly
⑦ FP-430 flexible board
(CN111, 20P, VF-111 board)
⑧ VF-111 board
⑱ VF cabinet (bottom)
⑤ Screw
(Lock ace, P2)
③ Base cabinet (S) assembly
② Slider
④ Screw
(Lock ace, P2)
① Two screws
(Lock ace, P2)

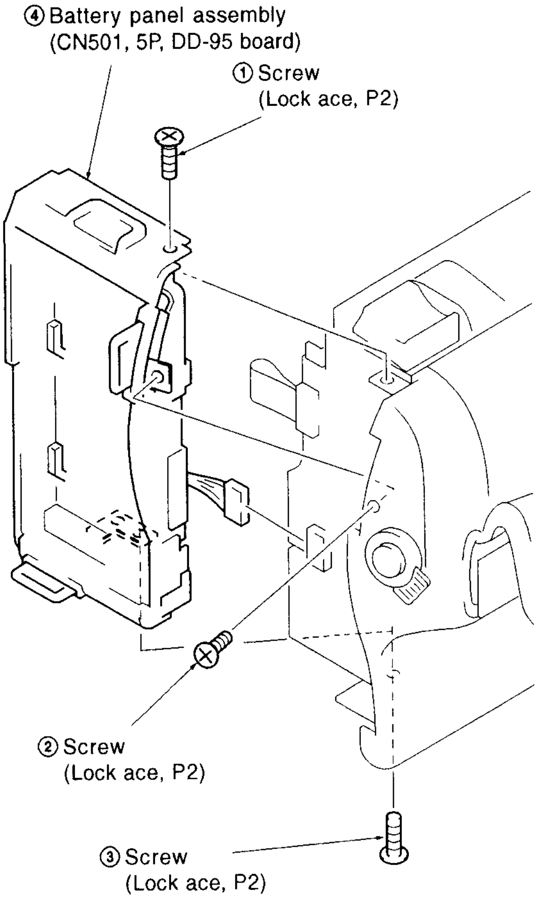
2-6. REMOVAL OF EVF BLOCK ASSEMBLY (2) (B/W)


⑤ Finder assembly
⑦ Tapping screw
⑧ VF cabinet (B) assembly
⑫ VF cabinet (R)
⑯ CRT assembly
⑥ Tapping screw
④ Tapping screw (M1.7x3)
⑬ CRT socket
⑨ Conpressing spring
⑩ Two tapping screws
① Screw (M2x4)
⑮ VF-99 board
⑭ FP-490 flexible board
(CN901, 4P, VF-99 board)
⑪ VF cabinet (L)
assembly
③ Base cabinet (B) assembly
② Two screws
(M2x4)

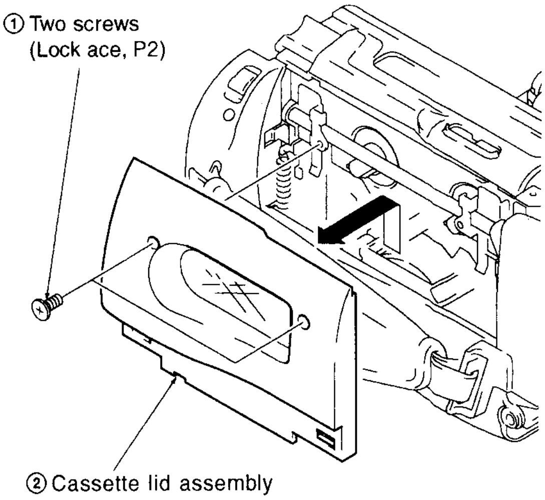
2-7. REMOVAL OF CONTROL SWITCH BLOCK (CF DS-TR)


③ Liquid crystal display panel
(CN152, 20P, LC-56 board)
② Four tapping screws
④ Control switch block
(CF DS-TR)
(CN151, 8P, LC-56 board)
① Six tapping screws
⑤ LC-56 board

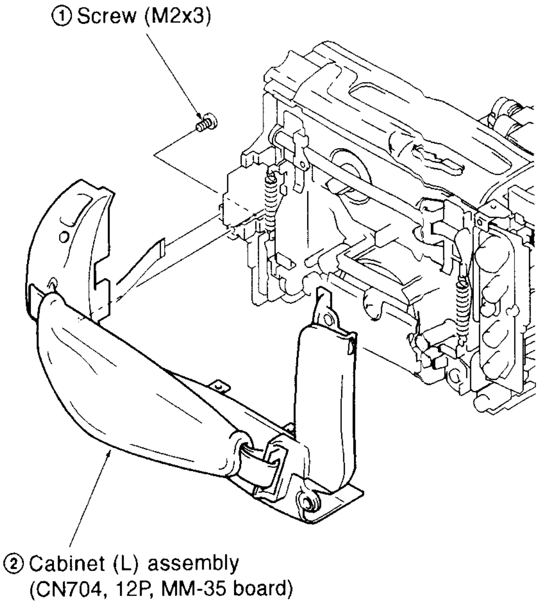
2-8. REMOVAL OF BATTERY PANEL ASSEMBLY


④ Battery panel assembly
(CN501, 5P, DD-95 board)
① Screw
(Lock ace, P2)
② Screw
(Lock ace, P2)
③ Screw
(Lock ace, P2)

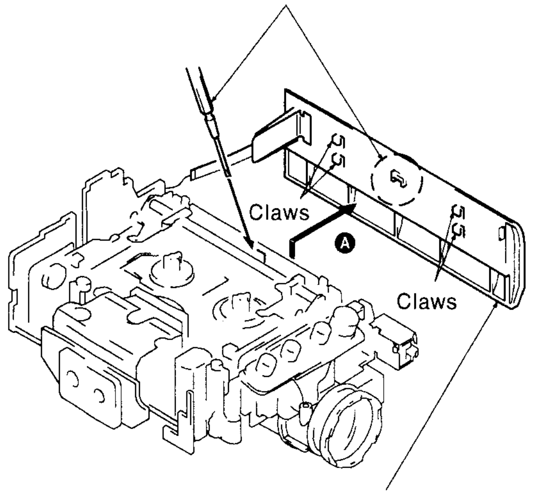
2-9. REMOVAL OF CASSETTE LID ASSEMBLY


① Two screws
(Lock ace, P2)
② Cassette lid assembly

2-10. REMOVAL OF CABINET (L) ASSEMBLY


① Screw (M2x3)
② Cabinet (L) assembly
(CN704, 12P, MM-35 board)

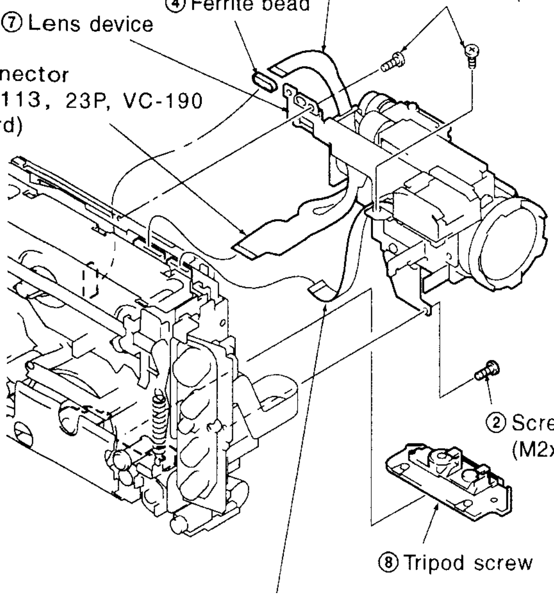
2-11. REMOVAL OF LS LID ASSEMBLY



① Push the claw with a screwdriver (flat-blade) and remove the LS lid assembly in the direction of arrow Ⓐ.

② LS lid assembly
(CN703, 10P, MM-35 board)

2-12. REMOVAL OF LENS DEVICE



③ FP-426 flexible board
(CN112, 16P, VC-190 board)

④ Ferrite bead

① Two screws (M2x3)

⑦ Lens device

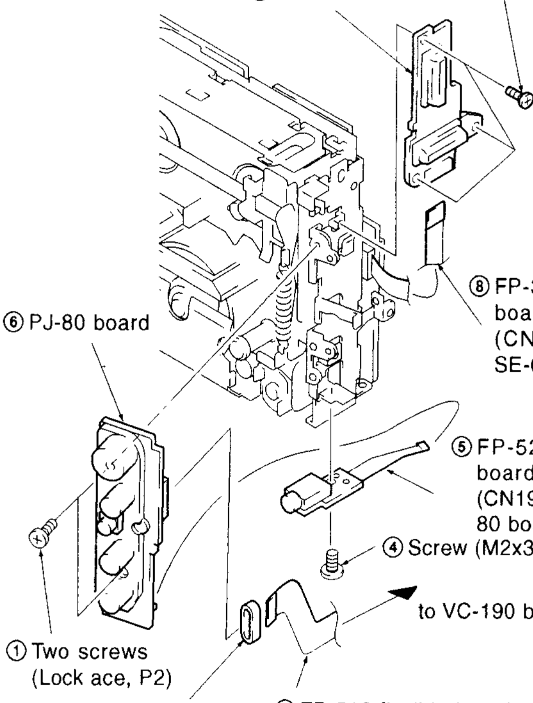
⑤ Connector
(CN113, 23P, VC-190 board)

② Screw
(M2x3)

⑧ Tripod screw

⑥ FP-380 flexible board
(CN205, 10P, VC-190 board)
(CCD-TR825E)
FP-505 flexible board
(CN205, 10P, VC-190 board)
(CCD-TR920E/TR930)

2-13. REMOVAL OF PJ-80 BOARD AND SE-61 BOARD



⑦ Three screws
(M2x3)

⑨ SE-61 board

⑧ FP-377 flexible board
(CN451, 12P, SE-61 board)

⑥ PJ-80 board

⑤ FP-527 flexible board
(CN1965, 6P, PJ-80 board)

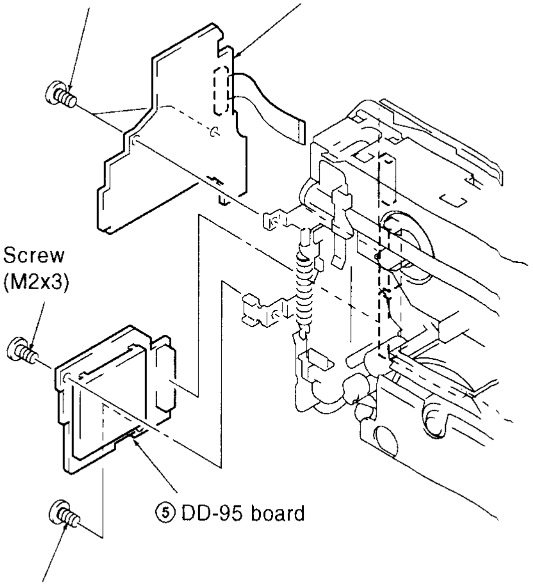
④ Screw (M2x3)

① Two screws
(Lock ace, P2)

③ Ferrite bead

② FP-516 flexible board
(CN102, 18P, PJ-80 board)

2-14. REMOVAL OF MM-35 BOARD AND DD-95 BOARD



① Two screws
(M2x3)

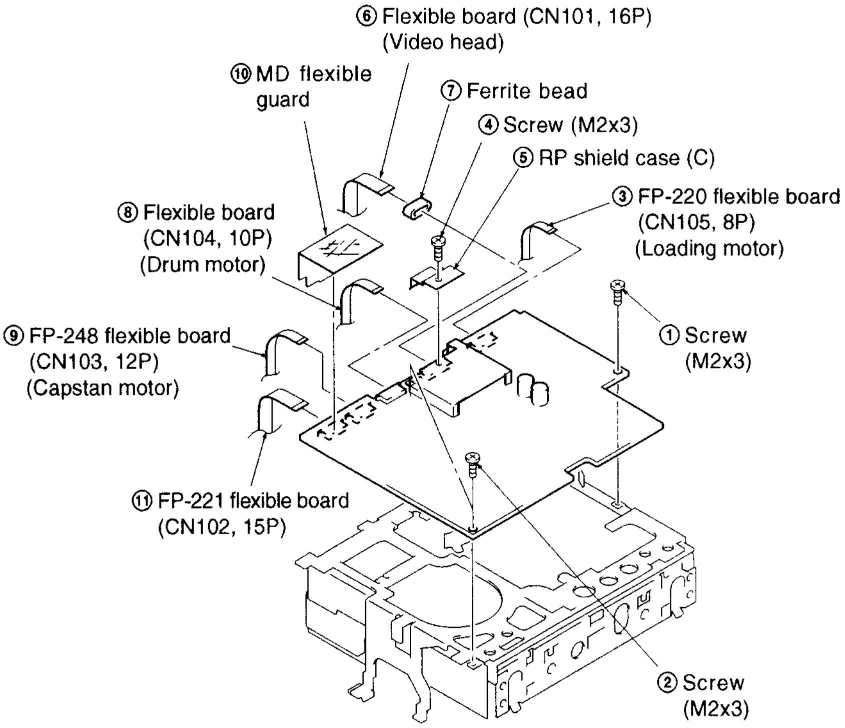
② MM-35 board
(CN1951, 16P, VC-190 board)

③ Screw
(M2x3)

⑤ DD-95 board

④ Screw
(M2x3)

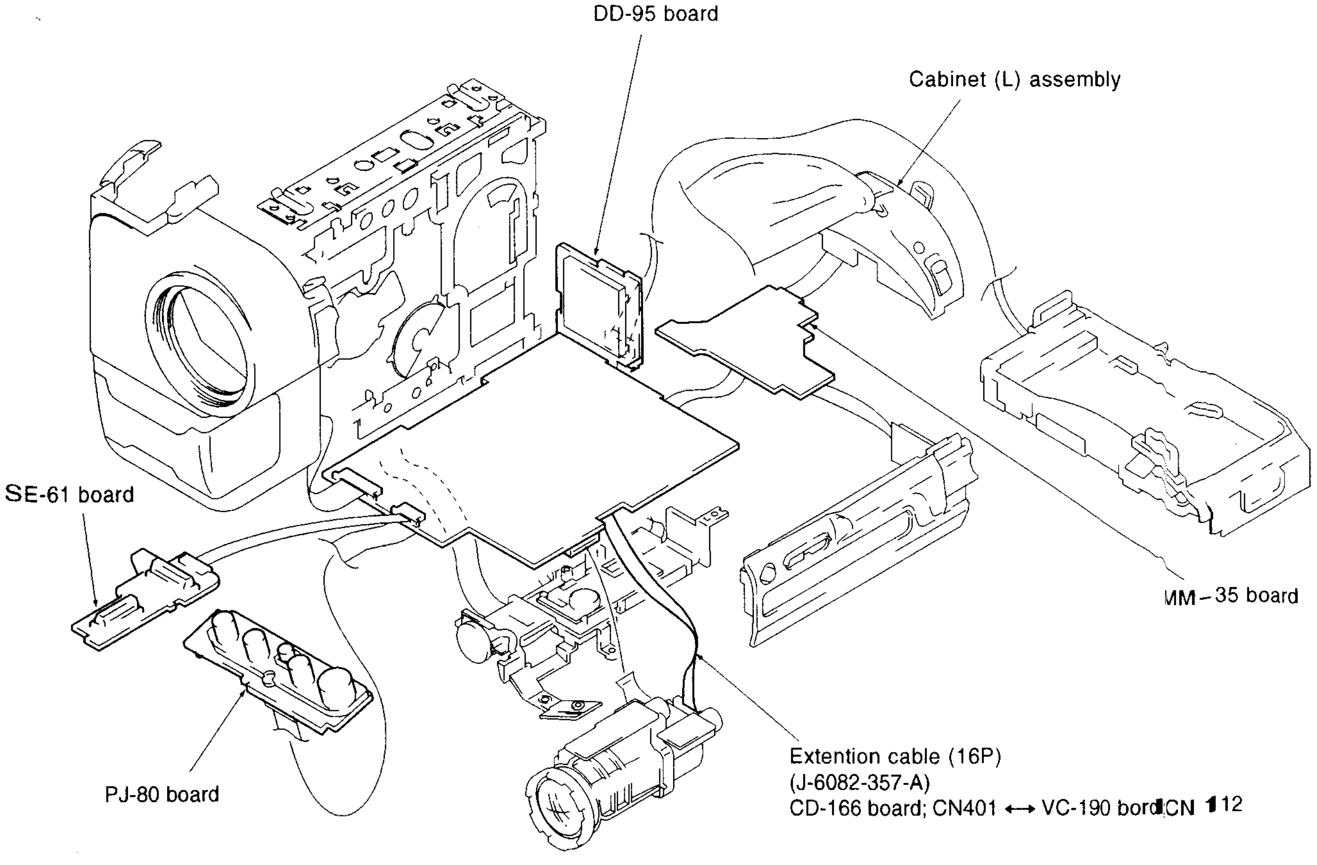
2-15. REMOVAL OF VC-190 BOARD


⑥ Flexible board (CN101, 16P)
(Video head)
⑩ MD flexible guard
⑦ Ferrite bead
④ Screw (M2x3)
⑤ RP shield case (C)
③ FP-220 flexible board
(CN105, 8P)
(Loading motor)
⑧ Flexible board
(CN104, 10P)
(Drum motor)
⑨ FP-248 flexible board
(CN103, 12P)
(Capstan motor)
① Screw
(M2x3)
⑪ FP-221 flexible board
(CN102, 15P)
② Screw
(M2x3)

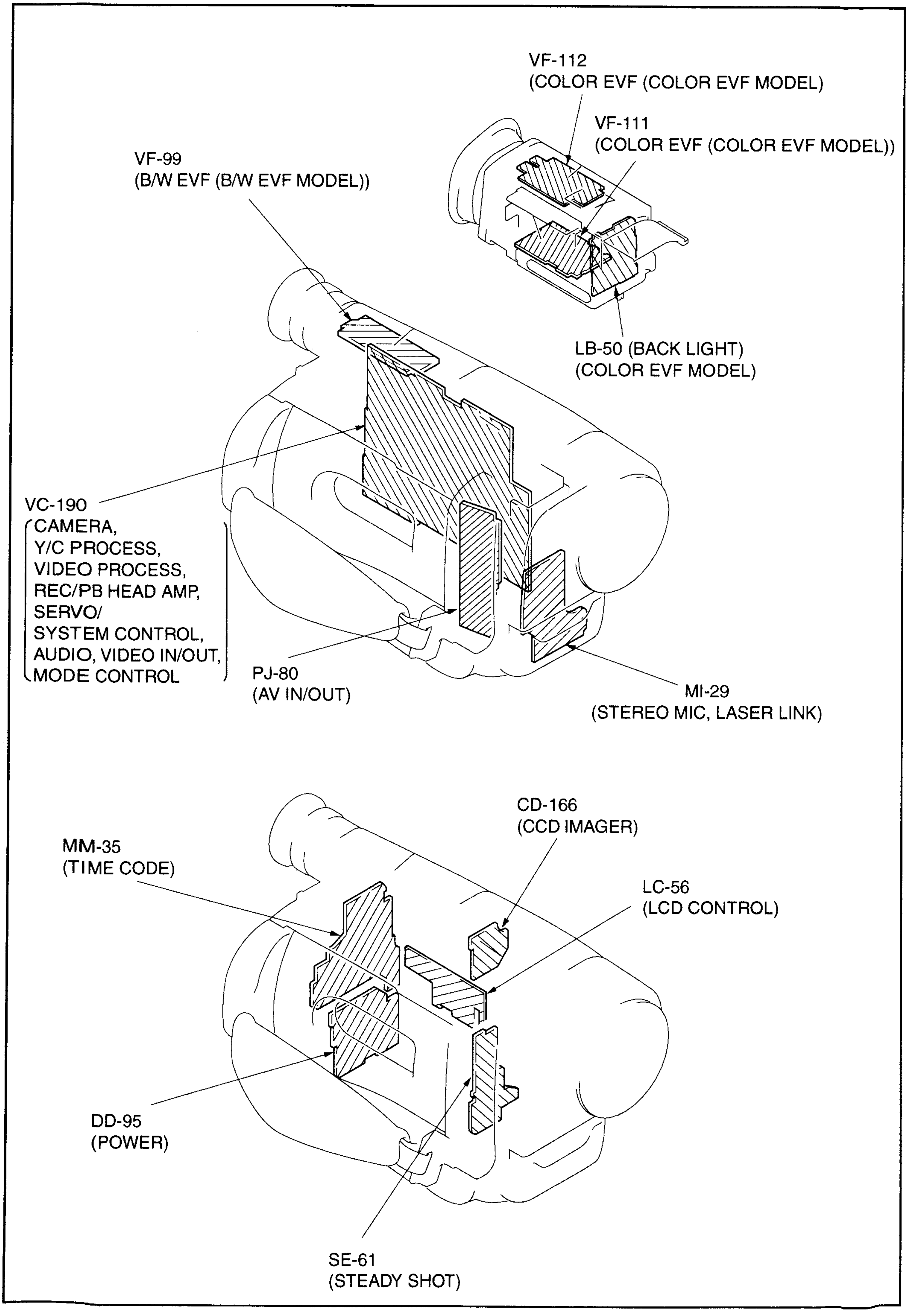
2-16. SERVICE POSITION

Note: When the following parts are removed, be sure to remember the connection parts because those connectors and etc. are needed to connect later on.

① Refer to 2-1. to remove the front panel assembly.
② Refer to 2-2. to remove the cabinet (R) assembly.
③ Refer to 2-8. to remove the battery panel assembly.
④ Refer to 2-10. to remove the cabinet (L) assembly.
⑤ Refer to 2-11. to remove the ls lid assembly.
⑥ Refer to 2-12. to remove the lens device.
⑦ Refer to 2-13. to remove the PJ-80 board and SE-61 board.
⑧ Refer to 2-15. to remove the VC-190 board.


DD-95 board
Cabinet (L) assembly
SE-61 board
MM-35 board
PJ-80 board
Extention cable (16P)
(J-6082-357-A)
CD-166 board; CN401 ↔ VC-190 bordCN 112

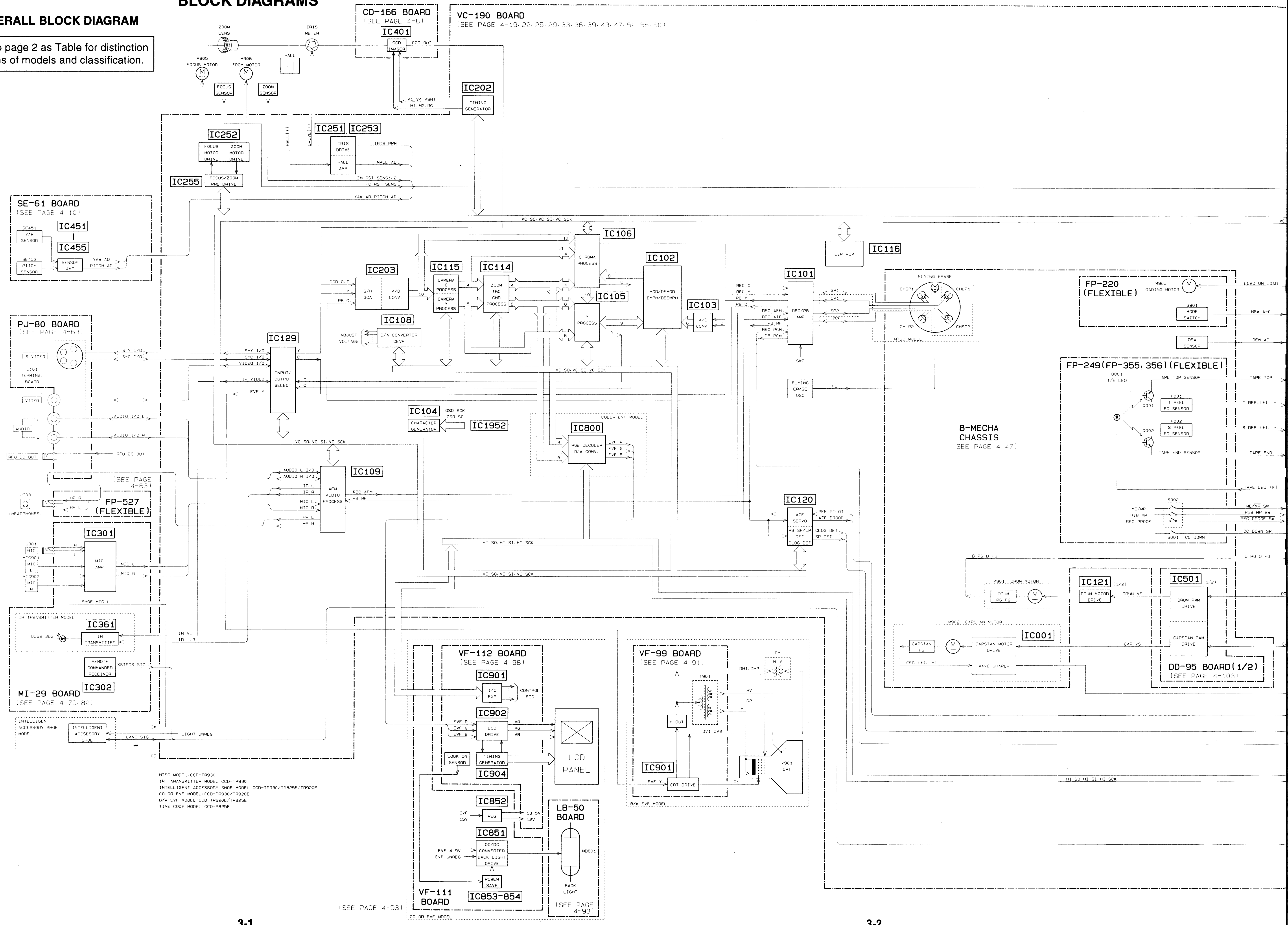
2-17. CIRCUIT BOARDS LOCATION


VF-112
(COLOR EVF (COLOR EVF MODEL)
VF-111
(COLOR EVF (COLOR EVF MODEL))
VF-99
(B/W EVF (B/W EVF MODEL))
LB-50 (BACK LIGHT)
(COLOR EVF MODEL)
VC-190
CAMERA,
Y/C PROCESS,
VIDEO PROCESS,
REC/PB HEAD AMP,
SERVO/
SYSTEM CONTROL,
AUDIO, VIDEO IN/OUT,
MODE CONTROL
PJ-80
(AV IN/OUT)
MI-29
(STEREO MIC, LASER LINK)
CD-166
(CCD IMAGER)
MM-35
(TIME CODE)
LC-56
(LCD CONTROL)
DD-95
(POWER)
SE-61
(STEADY SHOT)

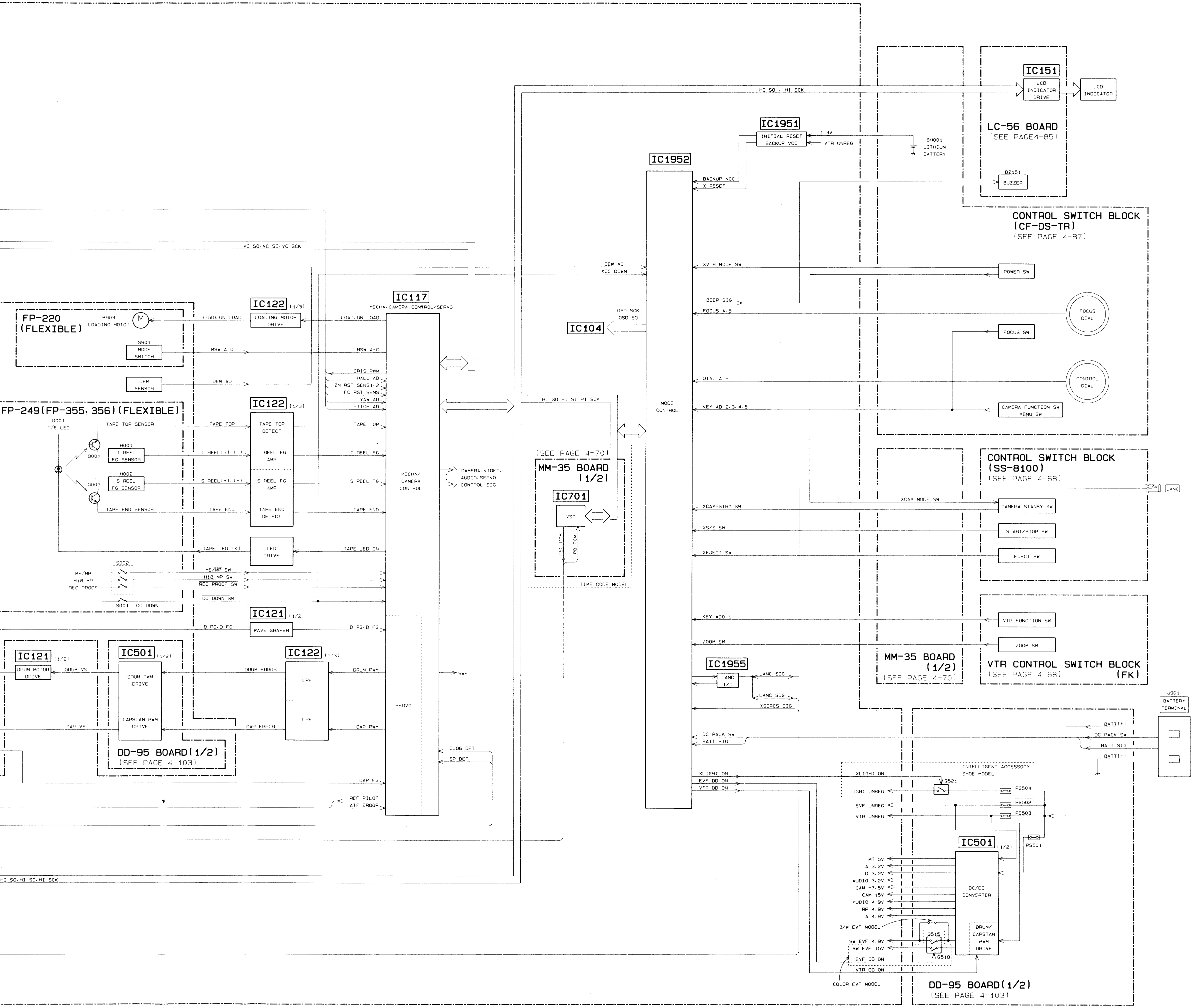
SECTION 3
BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM

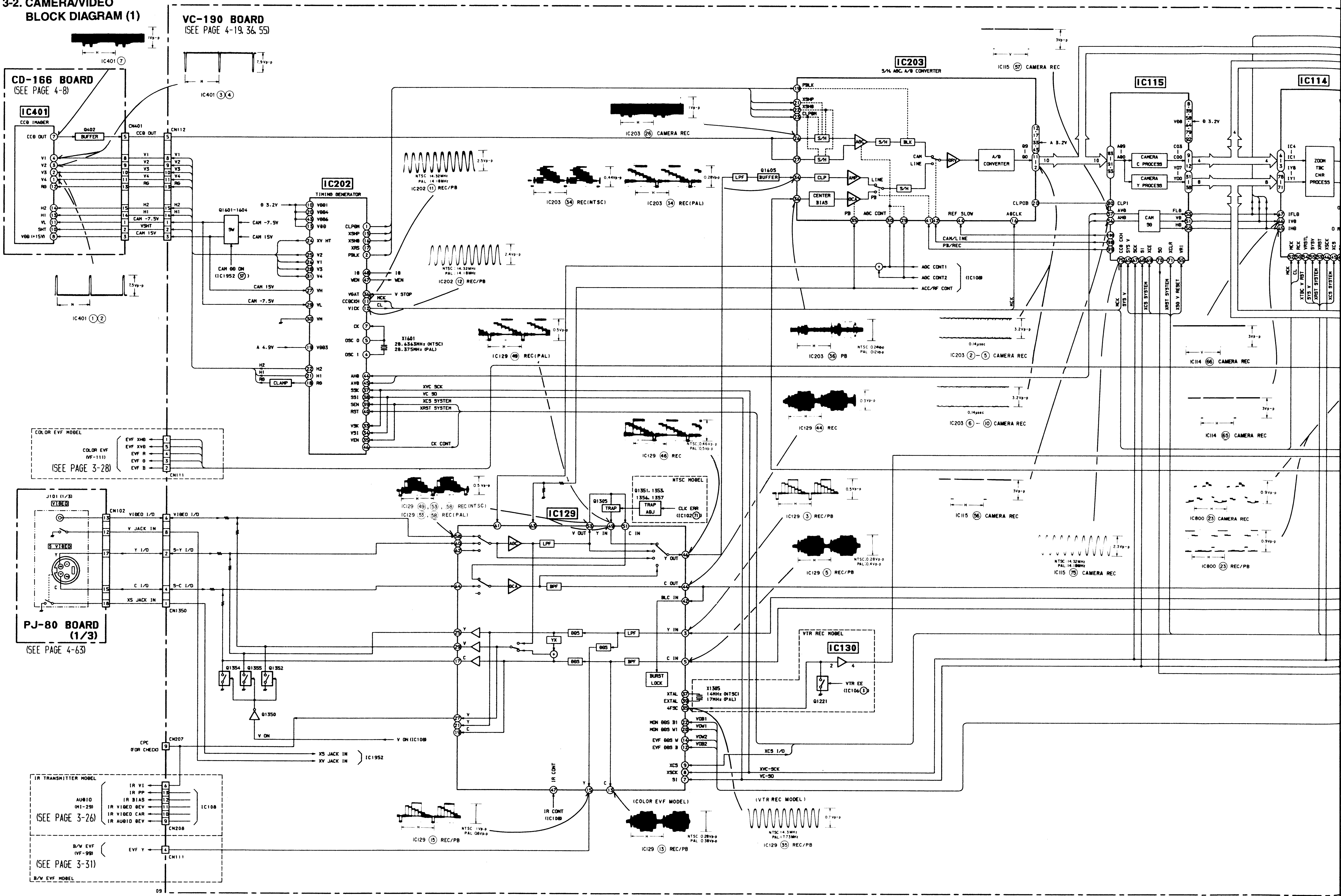
Refer to page 2 as Table for distinction functions of models and classification.

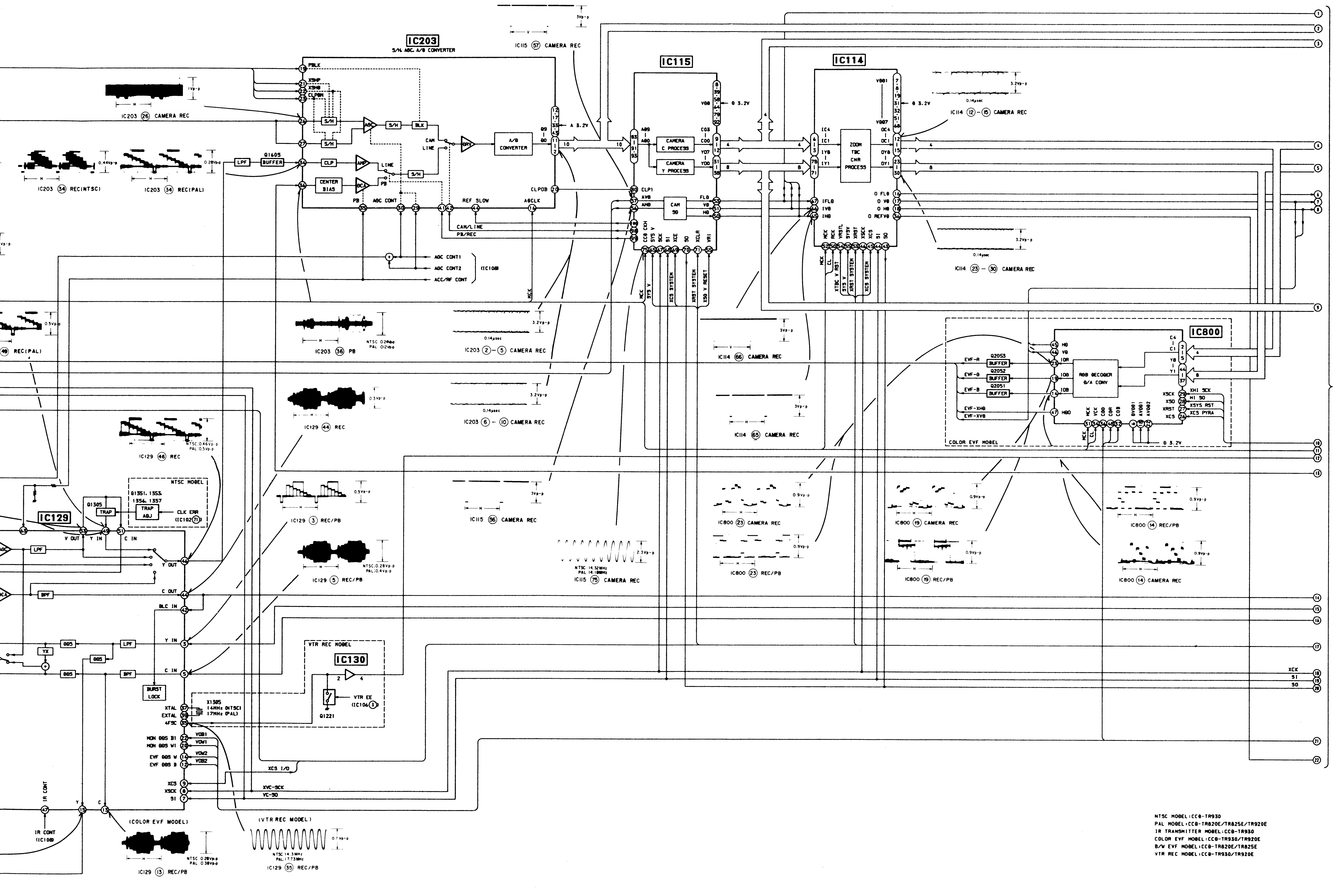

CD-166 BOARD
(SEE PAGE 4-8)
IC401
CCD IMAGER
CCD OUT
VC-190 BOARD
(SEE PAGE 4-19, 22, 25, 29, 33, 36, 39, 43, 47, 52, 56, 60)
ZOOM LENS
IRIS METER
HALL
M905 FOCUS MOTOR
M906 ZOOM MOTOR
FOCUS SENSOR
ZOOM SENSOR
IC202
TIMING GENERATOR
V1-V4 VSHT
H1, H2, RG
IC252
FOCUS MOTOR DRIVE
ZOOM MOTOR DRIVE
IC251
IC253
IRIS DRIVE
HALL AMP
IRIS PWM
HALL AD
HALL(+)
DRIVE(+)
IC255
FOCUS/ZOOM PRE DRIVE
ZM RST SENS1, 2
FC RST SENS
YAW AD, PITCH AD
SE-61 BOARD
(SEE PAGE 4-10)
IC451
IC455
SE451 YAW SENSOR
SE452 PITCH SENSOR
SENSOR AMP
YAW AD
PITCH AD
VC SO, VC SI, VC SCK
IC106
CHROMA PROCESS
IC116
EEP ROM
IC102
MOD/DEMOD EMPH/DEEMPH
IC101
REC/PB AMP
IC203
S/H GCA
A/D CONV.
CCD OUT
IC115
CAMERA C PROCESS
CAMERA Y PROCESS
IC114
ZOOM TBC CNR PROCESS
IC105
Y PROCESS
IC103
A/D CONV.
REC C
REC Y
PB Y
PB C
REC AFM
REC ATF
PB RF
REC PCM
PB PCM
SP1
LP1
SP2
LP2
SWP
FLYING ERASE OSC
FE
IC108
D/A CONVERTER CEVR
ADJUST VOLTAGE
PJ-80 BOARD
(SEE PAGE 4-63)
S VIDEO
J101 TERMINAL BOARD
VIDEO
AUDIO
L
R
RFU DC OUT
S-Y I/O
S-C I/O
VIDEO I/O
AUDIO I/O L
AUDIO I/O R
RFU DC OUT
IC129
INPUT/ OUTPUT SELECT
IR VIDEO
EVF Y
IC104
CHARACTER GENERATOR
OSD SCK
OSD SO
IC1952
COLOR EVF MODEL
IC800
RGB DECODER D/A CONV
EVF R
EVF G
EVF B
IC109
AFM AUDIO PROCESS
AUDIO L I/O
AUDIO R I/O
IR L
IR R
MIC L
MIC R
HP L
HP R
REC AFM
PB RF
(SEE PAGE 4-63)
J903
(HEADPHONES)
HP R
HP L
FP-527 (FLEXIBLE)
IC301
MIC AMP
J301
MIC901
MIC902
MIC L
MIC R
SHOE MIC L
IR TRANSMITTER MODEL
IC361
IR TRANSMITTER
D362, 363
IR VI
IR L-R
REMOTE COMMANDER RECEIVER
XSIRCS SIG
IC302
MI-29 BOARD
(SEE PAGE 4-79, 82)
INTELLIGENT ACCESSORY SHOE MODEL
INTELLIGENT ACCSESORY SHOE
LANC SIG
LIGHT UNREG
09
HI SO, HI SI, HI SCK
IC120
ATF SERVO
PB SP/LP DET
CLOG DET
REF PILOT
ATF ERROR
CLOG DET
SP DET
FLYING ERASE
CHSP1
CHLP1
CHLP2
CHSP2
NTSC MODEL
B-MECHA CHASSIS
(SEE PAGE 4-47)
FP-220 (FLEXIBLE)
M903 LOADING MOTOR
S901 MODE SWITCH
LOAD/UN LOAD
MSW A-C
DEW SENSOR
DEW AD
FP-249 (FP-355, 356) (FLEXIBLE)
D001 T/E LED
TAPE TOP SENSOR
TAPE TOP
H001 T REEL FG SENSOR
Q001
T REEL(+), (-)
H002 S REEL FG SENSOR
Q002
S REEL(+), (-)
TAPE END SENSOR
TAPE END
TAPE LED (K)
S002
ME/MP
Hi8 MP
REC PROOF
ME/MP SW
Hi8 MP SW
REC PROOF SW
CC DOWN SW
S001 CC DOWN
D PG, D FG
M901 DRUM MOTOR
DRUM PG FG
IC121 (1/2)
DRUM MOTOR DRIVE
DRUM VS
IC501 (1/2)
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
M902 CAPSTAN MOTOR
CAPSTAN FG
CFG (+), (-)
IC001
CAPSTAN MOTOR DRIVE
WAVE SHAPER
CAP VS
DD-95 BOARD (1/2)
(SEE PAGE 4-103)
VC
VF-112 BOARD
(SEE PAGE 4-98)
IC901
I/O EXP
CONTROL SIG
IC902
LCD DRIVE
EVF R
EVF G
EVF B
VR
VG
VB
LOOK ON SENSOR
TIMING GENERATOR
IC904
LCD PANEL
IC852
REG
EVF 15V
13.5V
12V
IC851
DC/DC CONVERTER BACK LIGHT DRIVE
EVF 4.9V
EVF UNREG
POWER SAVE
IC853-854
VF-111 BOARD
(SEE PAGE 4-93)
COLOR EVF MODEL
LB-50 BOARD
ND801
BACK LIGHT
(SEE PAGE 4-93)
VF-99 BOARD
(SEE PAGE 4-91)
DY
H
V
DH1, DH2
T901
HV
G2
H
H OUT
DV1, DV2
IC901
EVF Y
CRT DRIVE
G1
V901 CRT
B/W EVF MODEL

NTSC MODEL CCD-TR930
IR TARANSMITTER MODEL:CCD-TR930
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR930/TR825E/TR920E
COLOR EVF MODEL:CCD-TR930/TR920E
B/W EVF MODEL:CCD-TR820E/TR825E
TIME CODE MODEL:CCD-R825E


FP-220
(FLEXIBLE)
M903 LOADING MOTOR
S901 MODE SWITCH
DEW SENSOR
FP-249(FP-355, 356)(FLEXIBLE)
D001 T/E LED
Q001
Q002
H001 T REEL FG SENSOR
H002 S REEL FG SENSOR
TAPE TOP SENSOR
TAPE END SENSOR
S002
ME/MP
Hi8 MP
REC PROOF
S001 CC DOWN
IC122 (1/3)
LOADING MOTOR DRIVE
IC122 (1/3)
TAPE TOP DETECT
T REEL FG AMP
S REEL FG AMP
TAPE END DETECT
LED DRIVE
IC121 (1/2)
WAVE SHAPER
IC121 (1/2)
DRUM MOTOR DRIVE
IC501 (1/2)
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
DD-95 BOARD(1/2)
(SEE PAGE 4-103)
IC122 (1/3)
LPF
LPF
LOAD-UN LOAD
MSW A-C
DEW AD
TAPE TOP
T REEL(+),(-)
S REEL(+),(-)
TAPE END
TAPE LED (K)
TAPE LED ON
ME/MP SW
Hi8 MP SW
REC PROOF SW
CC DOWN SW
D PG-D FG
DRUM VS
DRUM ERROR
DRUM PWM
CAP VS
CAP ERROR
CAP PWM
CAP FG
REF PILOT
ATF ERROR
CLOG DET
SP DET
SWP
IRIS PWM
HALL AD
ZM RST SENS1-2
FC RST SENS
YAW AD
PITCH AD
T REEL FG
S REEL FG
VC SO-VC SI-VC SCK
HI SO-HI SI-HI SCK
HI SO · HI SCK
IC117
MECHA/CAMERA CONTROL/SERVO
MECHA/ CAMERA CONTROL
SERVO
CAMERA-VIDEO-AUDIO-SERVO CONTROL SIG
DEW AD
XCC DOWN
OSD SCK
OSD SO
IC104
(SEE PAGE 4-70)
MM-35 BOARD (1/2)
IC701
VSC
REC PCM
PB PCM
TIME CODE MODEL
IC1952
MODE CONTROL
BACKUP VCC
X RESET
IC1951
INITIAL RESET BACKUP VCC
LI 3V
VTR UNREG
BH001 LITHIUM BATTERY
XVTR MODE SW
BEEP SIG
FOCUS A-B
DIAL A-B
KEY AD 2,3,4,5
XCAM+STBY SW
XS/S SW
XEJECT SW
KEY AD0,1
ZOOM SW
IC1955
LANC I/O
LANC SIG
LANC SIG
XSIRCS SIG
DC PACK SW
BATT SIG
XLIGHT ON
EVF DD ON
VTR DD ON
IC151
LCD INDICATOR DRIVE
LCD INDICATOR
LC-56 BOARD
(SEE PAGE 4-85)
BZ151
BUZZER
CONTROL SWITCH BLOCK
(CF-DS-TR)
(SEE PAGE 4-87)
POWER SW
FOCUS DIAL
FOCUS SW
CONTROL DIAL
CAMERA FUNCTION SW MENU SW
CONTROL SWITCH BLOCK
(SS-8100)
(SEE PAGE 4-68)
LANC
XCAM MODE SW
CAMERA STANBY SW
START/STOP SW
EJECT SW
VTR FUNCTION SW
ZOOM SW
MM-35 BOARD (1/2)
(SEE PAGE 4-70)
VTR CONTROL SWITCH BLOCK
(SEE PAGE 4-68) (FK)
J901 BATTERY TERMINAL
BATT(+)
DC PACK SW
BATT SIG
BATT(-)
INTELLIGENT ACCESSORY SHOE MODEL
XLIGHT ON
LIGHT UNREG
Q521
PS504
PS502
PS503
PS501
EVF UNREG
VTR UNREG
IC501 (1/2)
DC/DC CONVERTER
DRUM/ CAPSTAN PWM DRIVE
MT 5V
A 3.2V
D 3.2V
AUDIO 3.2V
CAM -7.5V
CAM 15V
AUDIO 4.9V
RP 4.9V
A 4.9V
B/W EVF MODEL
SW EVF 4.9V
SW EVF 15V
Q515
Q518
EVF DD ON
VTR DD ON
COLOR EVF MODEL
DD-95 BOARD(1/2)
(SEE PAGE 4-103)

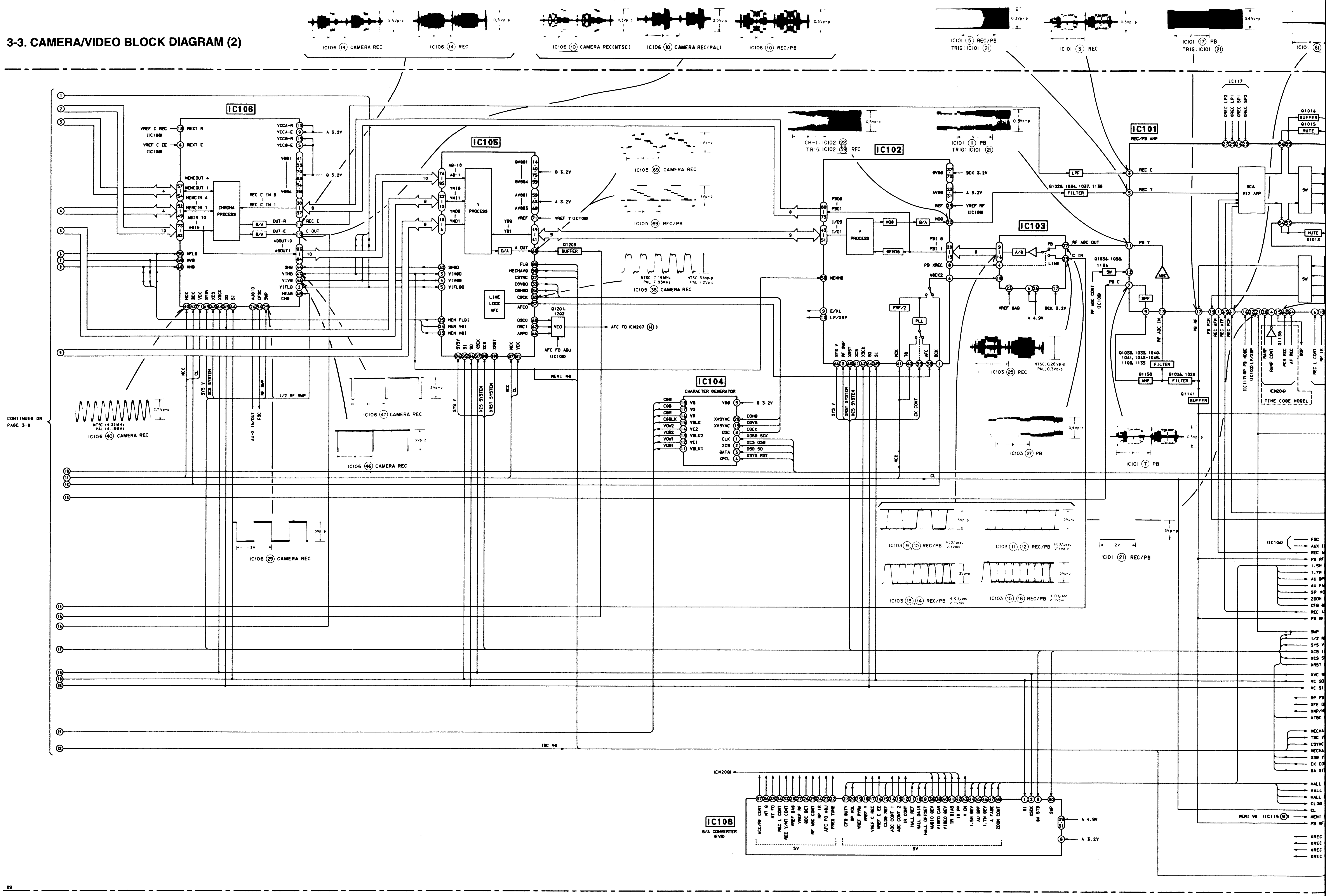
3-2. CAMERA/VIDEO BLOCK DIAGRAM (1)

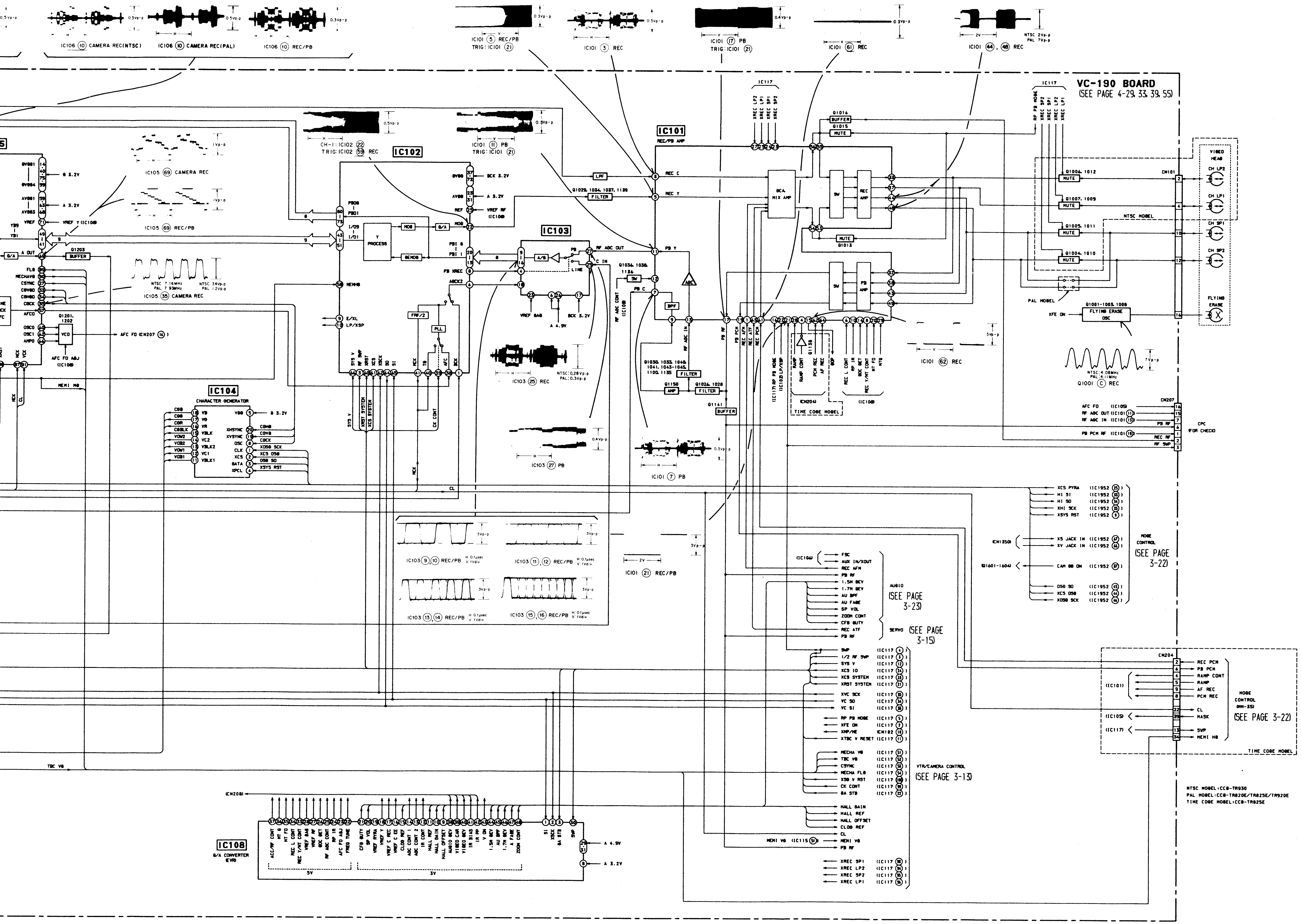

VC-190 BOARD
(SEE PAGE 4-19, 36, 55)
CD-166 BOARD
(SEE PAGE 4-8)
IC401
CCD IMAGER
CCD OUT
Q402 BUFFER
CN401
CN112
V1
V2
V3
V4
RG
H2
H1
VL
SHT
VDD (+15V)
CAM -7.5V
VSHT
CAM 15V
IC401 ⑦
IC401 ③④
IC401 ①②
Q1601-1604
SW
CAM DD ON (IC1952 (57))
IC202
TIMING GENERATOR
X1601
28.6363MHz (NTSC)
28.375MHz (PAL)
CLAMP
IC202 ⑪ REC/PB
IC202 ⑫ REC/PB
IC203
S/H, AGC, A/D CONVERTER
IC203 (26) CAMERA REC
IC203 (34) REC(NTSC)
IC203 (34) REC(PAL)
Q1605 BUFFER
LPF
S/H
AGC
BLK
CLP
AMP
CENTER BIAS
GCA
CAM
LINE
A/D CONVERTER
AGC CONT1
AGC CONT2
ACC/RF CONT
(IC108)
CAM/LINE
PB/REC
REF SLOW
ADCLK
CLPOB
IC203 (36) PB
IC203 ②-⑤ CAMERA REC
IC203 ⑥-⑩ CAMERA REC
IC115
CAMERA C PROCESS
CAMERA Y PROCESS
CAM SG
IC115 (57) CAMERA REC
IC115 (56) CAMERA REC
IC115 (75) CAMERA REC
IC114
ZOOM TBC CNR PROCESS
IC114 (66) CAMERA REC
IC114 (65) CAMERA REC
IC800 (23) CAMERA REC
IC800 (23) REC/PB
COLOR EVF MODEL
COLOR EVF (VF-111)
(SEE PAGE 3-28)
CN111
PJ-80 BOARD (1/3)
(SEE PAGE 4-63)
J101 (1/3)
VIDEO
S VIDEO
CN102
VIDEO I/O
V JACK IN
Y I/O
C I/O
XS JACK IN
CN1350
IC129
AGC
GCA
LPF
BPF
DDS
TRAP
TRAP ADJ
Q1305
NTSC MODEL
Q1351, 1353, 1356, 1357
CLK ERR (IC102 (71))
BURST LOCK
X1305
14MHz (NTSC)
17MHz (PAL)
Q1354
Q1355
Q1352
Q1350
V ON
V ON (IC108)
XS JACK IN
XV JACK IN
IC1952
VTR REC MODEL
IC130
Q1221
VTR EE (IC106 ③)
IC129 (49), (53), (58) REC(NTSC)
IC129 (53), (58) REC(PAL)
IC129 (49) REC(PAL)
IC129 (46) REC
IC129 (44) REC
IC129 ③ REC/PB
IC129 ⑤ REC/PB
IC129 (15) REC/PB
IC129 (13) REC/PB
IC129 (35) REC/PB
(COLOR EVF MODEL)
(VTR REC MODEL)
CPC (FOR CHECK)
CN207
IR TRANSMITTER MODEL
AUDIO (MI-29)
(SEE PAGE 3-26)
IR VI
IR PP
IR BIAS
IR VIDEO DEV
IR VIDEO CAR
IR AUDIO DEV
IC108
CN208
IR CONT (IC108)
B/W EVF (VF-99)
EVF Y
(SEE PAGE 3-31)
B/W EVF MODEL
XCS I/O
XVC-SCK
VC-SO
XCS SYSTEM
XRST SYSTEM
CK CONT


IC203
S/H, AGC, A/D CONVERTER
PBLK
XSHP
XSHD
CLPDM
S/H
AGC
BLK
CAM
LINE
DRV
A/D CONVERTER
CLP
AMP
CENTER BIAS
GCA
PB
AGC CONT
REF SLOW
ADCLK
CLPOB
A 3.2V
Q1605 BUFFER
LPF
CAM/LINE
PB/REC
AGC CONT1
AGC CONT2
ACC/RF CONT
(IC108)
IC203 (26) CAMERA REC
IC203 (34) REC(NTSC)
IC203 (34) REC(PAL)
IC203 (36) PB
IC203 (2)-(5) CAMERA REC
IC203 (6)-(10) CAMERA REC
IC115 (57) CAMERA REC
IC115 (56) CAMERA REC
IC115 (75) CAMERA REC
NTSC 14.32MHz
PAL 14.188MHz
IC115
CAMERA C PROCESS
CAMERA Y PROCESS
CAM SG
VDD
D 3.2V
CLP1
AVD
AHD
FLD
VD
HD
CCD CKH
SYS V
SCK
SI
XCE
SO
XCLR
VRI
XCS SYSTEM
XRST SYSTEM
XSG V RESET
MCK
IC114
ZOOM TBC CNR PROCESS
VDD1
VDD7
IC4 - IC1
IY8 - IY1
OC4 - OC1
OY8 - OY1
IFLD
IVD
IHD
O FLD
O VD
O HD
O REFVD
RCK
VRSTL
SYSV
XRST
XSCK
XCS
CL
XTBC V RST
IC114 (12)-(15) CAMERA REC
IC114 (23)-(30) CAMERA REC
IC114 (66) CAMERA REC
IC114 (65) CAMERA REC
0.14μsec
3.2Vp-p
IC800
RGB DECODER D/A CONV
EVF-R
EVF-G
EVF-B
EVF-XHD
EVF-XVD
Q2053 BUFFER
Q2052 BUFFER
Q2051 BUFFER
IOR
IOG
IOB
HDO
C4 - C1
Y8 - Y1
XSCK
XSO
XRST
XCS
XHI SCK
HI SO
XSYS RST
XCS PYRA
VCK
CGG
CGR
CGB
DVDD1
AVDD1
AVDD2
COLOR EVF MODEL
IC800 (23) CAMERA REC
IC800 (23) REC/PB
IC800 (19) CAMERA REC
IC800 (19) REC/PB
IC800 (14) REC/PB
IC800 (14) CAMERA REC
0.9Vp-p
CONTINUED ON PAGE 3-9
IC129
NTSC MODEL
Q1351, 1353, 1354, 1357
Q1305
TRAP
TRAP ADJ
CLK ERR (IC102 (71))
V OUT
Y IN
C IN
Y OUT
C OUT
BLC IN
BPF
DDS
YX
BURST LOCK
XTAL
EXTAL
4FSC
X1305 14MHz (NTSC) 17MHz (PAL)
MON DDS B1
MON DDS W1
EVF DDS W
EVF DDS B
VDB1
VDW1
VDW2
VDB2
XCS
XSCK
SI
XCS I/O
XVC-SCK
VC-SO
IR CONT
IR CONT (IC108)
(COLOR EVF MODEL)
(VTR REC MODEL)
VTR REC MODEL
IC130
VTR EE (IC106 (3))
Q1221
IC129 (44) REC
IC129 (46) REC
IC129 (3) REC/PB
IC129 (5) REC/PB
IC129 (13) REC/PB
IC129 (35) REC/PB
NTSC 14.3MHz
PAL 17.73MHz
NTSC:0.46Vp-p
PAL:0.5Vp-p
NTSC:0.28Vp-p
PAL:0.4Vp-p
NTSC 0.28Vp-p
PAL 0.38Vp-p
XCK
SI
SO

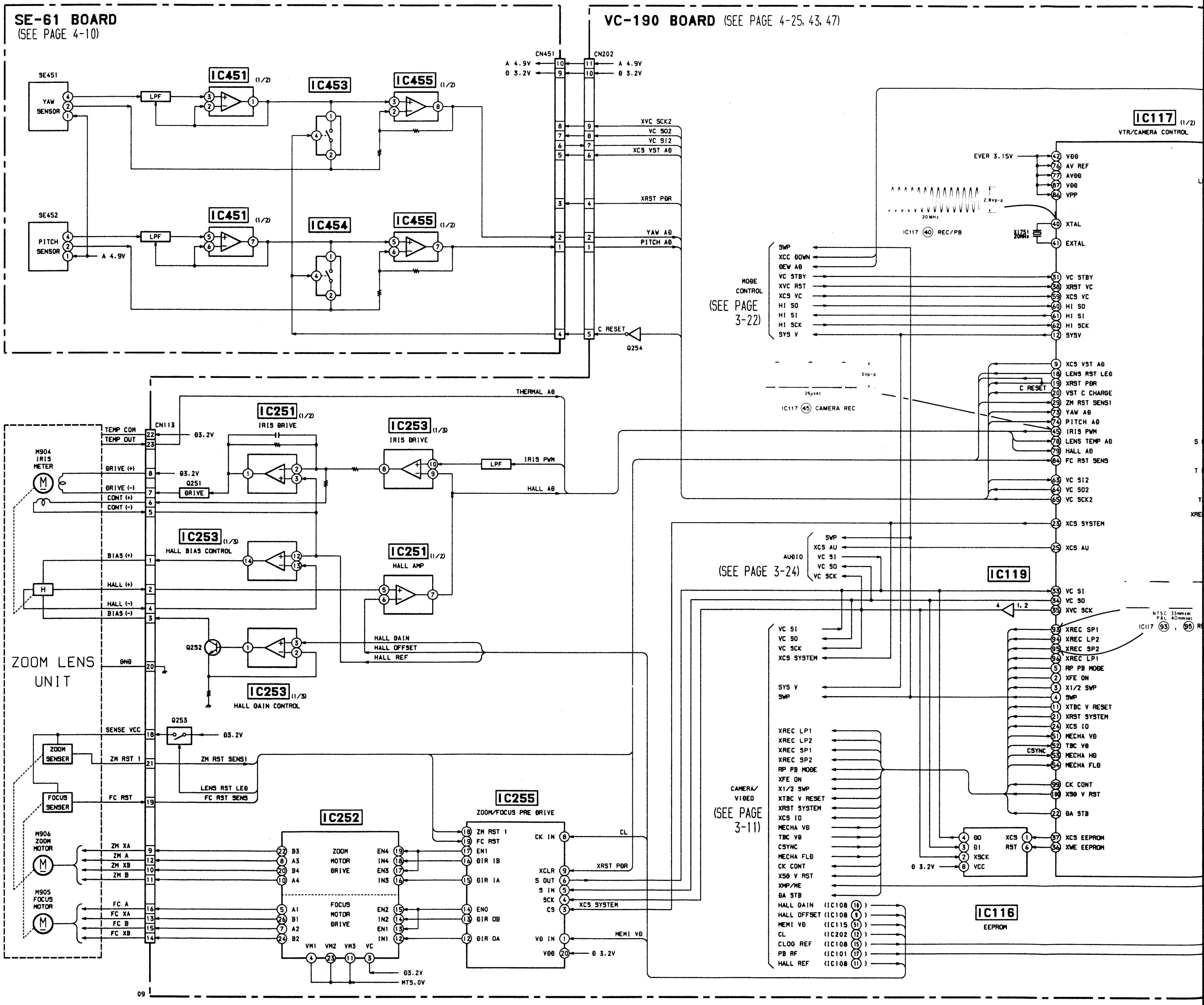
NTSC MODEL:CCD-TR930
PAL MODEL:CCD-TR820E/TR825E/TR920E
IR TRANSMITTER MODEL:CCD-TR930
COLOR EVF MODEL:CCD-TR930/TR920E
B/W EVF MODEL:CCD-TR820E/TR825E
VTR REC MODEL:CCD-TR930/TR920E

3-3. CAMERA/VIDEO BLOCK DIAGRAM (2)

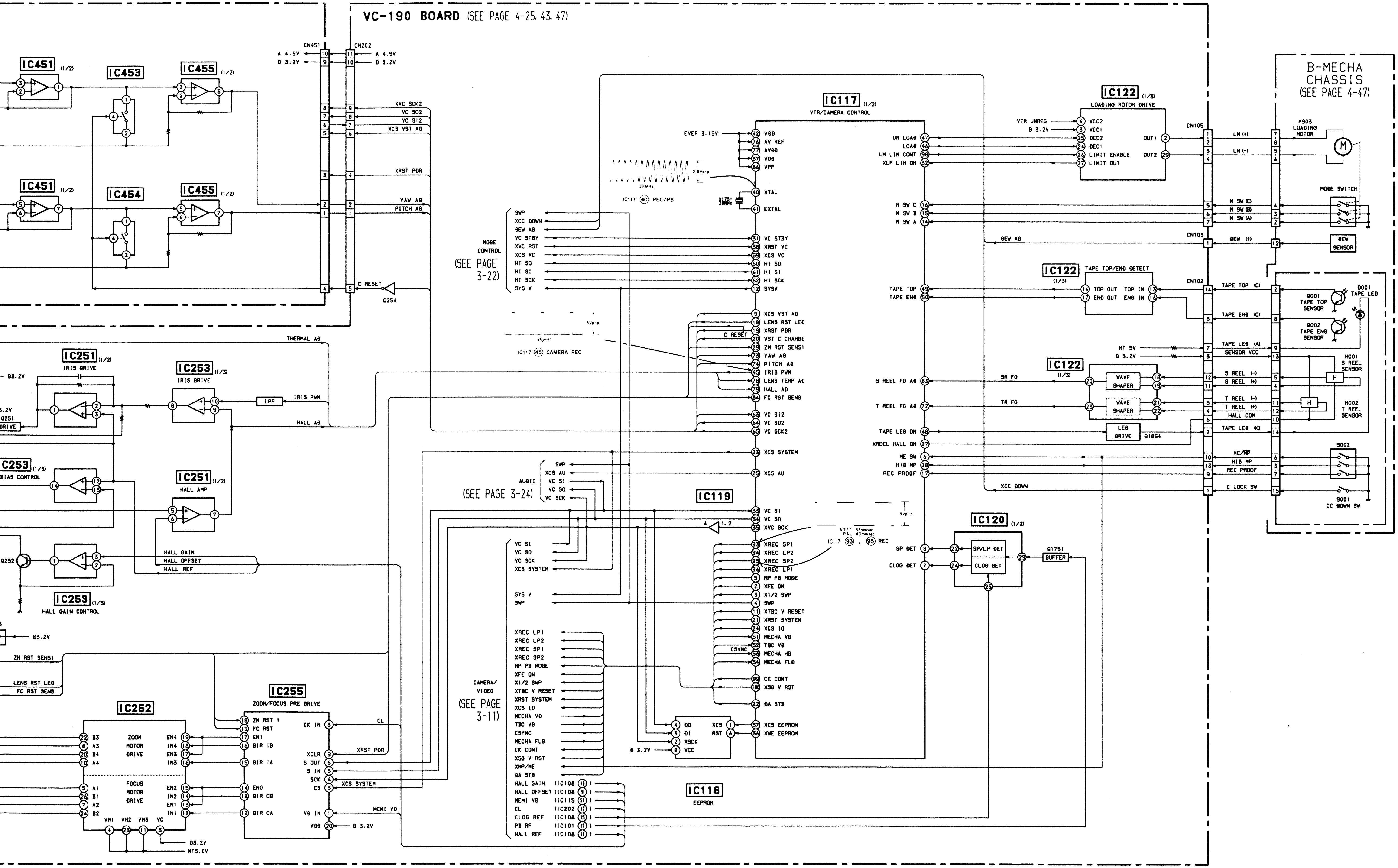

IC106
CHROMA PROCESS
VREF C REC (IC108)
VREF C EE (IC108)
REXT R
REXT E
MEMCOUT 4
MEMCOUT 1
MEMCIN 4
MEMCIN 1
ABIN 10
ABIN 1
VCCA-R
VCCA-E
VCCB-R
VCCB-E
A 3.2V
B 3.2V
REC C IN 8
REC C IN 1
D/A
OUT-R
OUT-E
REC C
C OUT
ABOUT10
ABOUT1
HFLB
HVB
HHB
IC105
AB-10
AB-1
YH10
YH11
YHB0
YHB1
Y PROCESS
A OUT
Q1203 BUFFER
LINE LOCK AFC
VCO
Q1201, 1202
AFC FO (CN207 ⑯)
AFC FO ADJ (IC108)
MEM FLB1
MEM VB1
MEM HB1
MEM1 HB
IC104
CHARACTER GENERATOR
IC102
Y PROCESS
PB XREC
E/XL
LP/XSP
FRF/2
PLL
IC103
A/B
PB
RF AGC OUT
C IN
LINE
IC101
REC/PB AMP
REC C
REC Y
PB Y
LPF
FILTER
BPF
AGC
AMP
BUFFER
Q1029, 1034, 1037, 1139
Q1150
Q1024, 1028
Q1141
IC117
Q1016 BUFFER
Q1015 MUTE
Q1013 MUTE
8CH MIX AMP
SW
TIME CODE MODEL
(CN204)
IC108
D/A CONVERTER (EVR)
5V
3V
A 4.9V
A 3.2V
(CN208)
MEM1 VB (IC115 ⑲)
CONTINUED ON PAGE 3-8
IC106 ⑭ CAMERA REC
IC106 ⑭ REC
IC106 ⑩ CAMERA REC(NTSC)
IC106 ⑩ CAMERA REC(PAL)
IC106 ⑩ REC/PB
IC101 ⑤ REC/PB TRIG: IC101 ㉑
IC101 ③ REC
IC101 ⑰ PB TRIG: IC101 ㉑
IC102 ㉒ CH-1 TRIG: IC102 ㊾ REC
IC101 ⑪ PB TRIG: IC101 ㉑
IC105 ㊾ CAMERA REC
IC105 ㊾ REC/PB
IC105 ㉟ CAMERA REC
NTSC 7.16MHz PAL 7.93MHz
IC106 ㊵ CAMERA REC
NTSC 14.32MHz PAL 14.18MHz
IC106 ㊼ CAMERA REC
IC106 ㊻ CAMERA REC
IC106 ㉙ CAMERA REC
IC103 ㉕ REC
NTSC: 0.28Vp-p PAL: 0.3Vp-p
IC103 ㉗ PB
IC101 ⑦ PB
IC103 ⑨,⑩ REC/PB
IC103 ⑪,⑫ REC/PB
IC103 ⑬,⑭ REC/PB
IC103 ⑮,⑯ REC/PB
H: 0.1μsec V: 1V/div
IC101 ㉑ REC/PB
1/2 RF SWP
TBC VD
CL


VC-190 BOARD
(SEE PAGE 4-29, 33, 39, 55)
IC101
REC/PB AMP
IC102
IC103
IC104
CHARACTER GENERATOR
IC108
D/A CONVERTER (EVR)
IC106 ⑩ CAMERA REC(NTSC)
IC106 ⑩ CAMERA REC(PAL)
IC106 ⑩ REC/PB
IC101 ⑤ REC/PB
TRIG: IC101 ㉑
IC101 ③ REC
IC101 ⑰ PB
TRIG: IC101 ㉑
IC101 ㉛ REC
IC101 ㊹, ㊽ REC
CH-1: IC102 ㉒
TRIG: IC102 ㊾ REC
IC101 ⑪ PB
TRIG: IC101 ㉑
IC105 ㊾ CAMERA REC
IC105 ㊾ REC/PB
IC105 ㉟ CAMERA REC
IC103 ㉕ REC
IC103 ㉗ PB
IC101 ⑦ PB
IC101 ㉑ REC/PB
IC101 ㊷ REC
Q1001 Ⓒ REC
IC103 ⑨,⑩ REC/PB
IC103 ⑪,⑫ REC/PB
IC103 ⑬,⑭ REC/PB
IC103 ⑮,⑯ REC/PB
Y PROCESS
VCO
BUFFER
LPF
FILTER
MUTE
SW
REC AMP
PB AMP
AGC MIX AMP
FLYING ERASE OSC
VIDEO HEAD
CH LP2
CH LP1
CH SP1
CH SP2
FLYING ERASE
NTSC MODEL
PAL MODEL
TIME CODE MODEL
CN101
CN204
CN207
CPC (FOR CHECK)
MODE CONTROL (SEE PAGE 3-22)
AUDIO (SEE PAGE 3-23)
SERVO (SEE PAGE 3-15)
VTR/CAMERA CONTROL (SEE PAGE 3-13)
MODE CONTROL (MH-35) (SEE PAGE 3-22)
NTSC MODEL:CCD-TR930
PAL MODEL:CCD-TR820E/TR825E/TR920E
TIME CODE MODEL:CCD-TR825E

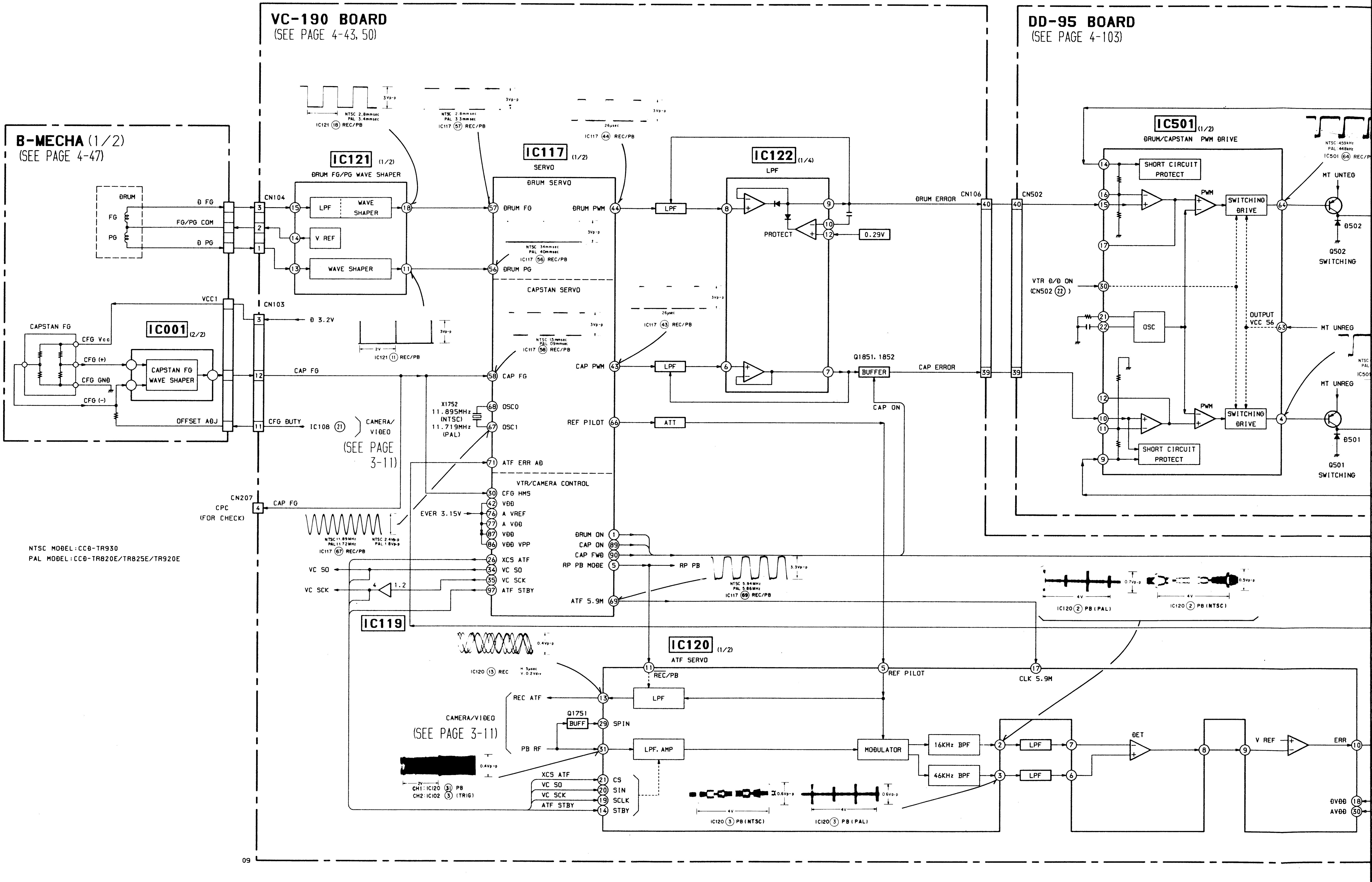
3-4. VTR/CAMERA CONTROL BLOCK DIAGRAM


SE-61 BOARD
(SEE PAGE 4-10)
VC-190 BOARD (SEE PAGE 4-25, 43, 47)
SE451
YAW SENSOR
SE452
PITCH SENSOR
A 4.9V
LPF
IC451 (1/2)
IC453
IC454
IC455 (1/2)
CN451
CN202
A 4.9V
B 3.2V
XVC SCK2
VC SO2
VC SI2
XCS VST AD
XRST PDR
YAW AD
PITCH AD
C RESET
Q254
IC117 (1/2)
VTR/CAMERA CONTROL
EVER 3.15V
VDD
AV REF
AVDD
VDD
VPP
XTAL
EXTAL
2.8Vp-p
20MHz
IC117 (40) REC/PB
X1751 20MHz
MODE CONTROL
(SEE PAGE 3-22)
SWP
XCC DOWN
DEW AD
VC STBY
XVC RST
XCS VC
HI SO
HI SI
HI SCK
SYS V
XRST VC
3Vp-p
26μsec
IC117 (45) CAMERA REC
XCS VST AD
LENS RST LED
XRST PDR
VST C CHARGE
ZM RST SENS1
YAW AD
PITCH AD
IRIS PWM
LENS TEMP AD
HALL AD
FC RST SENS
VC SI2
VC SO2
VC SCK2
XCS SYSTEM
XCS AU
AUDIO
(SEE PAGE 3-24)
VC SI
VC SO
VC SCK
IC119
XVC SCK
NTSC 33msec
PAL 40msec
IC117 (93), (95)
XREC SP1
XREC LP2
XREC SP2
XREC LP1
RP PB MODE
XFE ON
X1/2 SWP
XTBC V RESET
XRST SYSTEM
XCS IO
MECHA VD
TBC VD
CSYNC
MECHA HD
MECHA FLD
CK CONT
XSD V RST
DA STB
XCS EEPROM
XWE EEPROM
CAMERA/VIDEO
(SEE PAGE 3-11)
XMP/ME
HALL GAIN (IC108 (10))
HALL OFFSET (IC108 (9))
MEMI VD (IC115 (51))
CL (IC202 (12))
CLOG REF (IC108 (15))
PB RF (IC101 (17))
HALL REF (IC108 (11))
DO
DI
XSCK
VCC
XCS
RST
B 3.2V
IC116
EEPROM
THERMAL AD
CN113
TEMP COM
TEMP OUT
B3.2V
M904 IRIS METER
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
Q251
DRIVE
IC251 (1/2)
IRIS DRIVE
IC253 (1/3)
IRIS DRIVE
LPF
IRIS PWM
HALL AD
IC253 (1/3)
HALL BIAS CONTROL
BIAS (+)
HALL (+)
HALL (-)
BIAS (-)
H
IC251 (1/2)
HALL AMP
HALL GAIN
HALL OFFSET
HALL REF
Q252
IC253 (1/3)
HALL GAIN CONTROL
ZOOM LENS UNIT
GND
SENSE VCC
Q253
B3.2V
ZOOM SENSER
ZM RST 1
ZM RST SENS1
FOCUS SENSER
FC RST
LENS RST LED
FC RST SENS
IC255
ZOOM/FOCUS PRE DRIVE
ZM RST 1
FC RST
EN1
DIR 1B
DIR 1A
ENO
DIR OB
DIR OA
CK IN
CL
XCLR
XRST PDR
S OUT
S IN
SCK
CS
XCS SYSTEM
VD IN
MEMI VD
VDD
B 3.2V
IC252
ZOOM MOTOR DRIVE
FOCUS MOTOR DRIVE
B3
A3
B4
A4
A1
B1
A2
B2
EN4
IN4
EN3
IN3
EN2
IN2
EN1
IN1
VM1
VM2
VM3
VC
B3.2V
MT5.0V
M906 ZOOM MOTOR
ZM XA
ZM A
ZM XB
ZM B
M905 FOCUS MOTOR
FC A
FC XA
FC B
FC XB
09

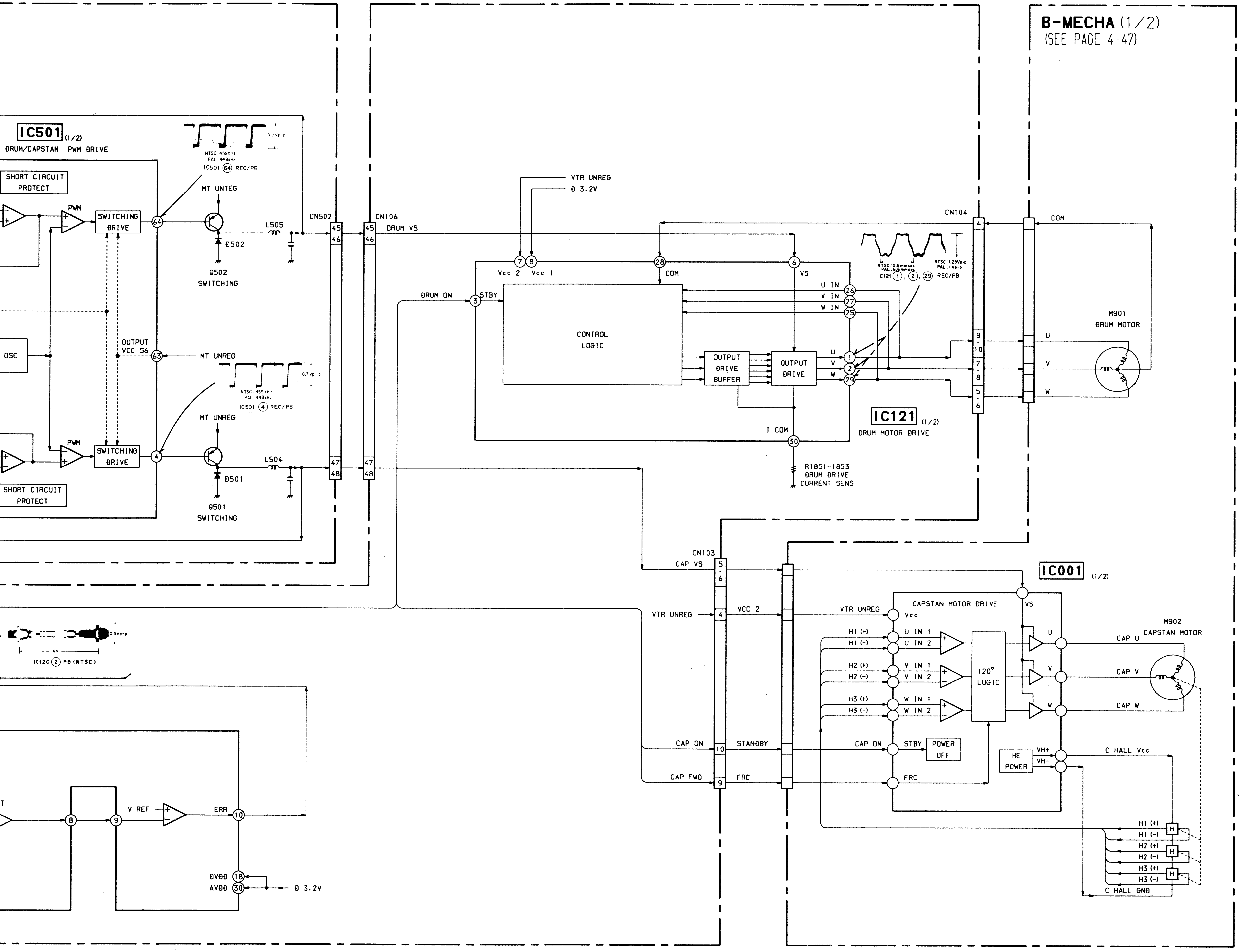
DIAGRAM


VC-190 BOARD (SEE PAGE 4-25, 43, 47)
B-MECHA CHASSIS (SEE PAGE 4-47)
IC451 (1/2)
IC453
IC455 (1/2)
IC454
CN451
CN202
A 4.9V
D 3.2V
XVC SCK2
VC SO2
VC SI2
XCS VST AD
XRST PDR
YAW AD
PITCH AD
C RESET
Q254
THERMAL AD
IC251 (1/2)
IRIS DRIVE
IC253 (1/3)
IRIS DRIVE
LPF
IRIS PWM
HALL AD
Q251
BIAS CONTROL
HALL AMP
HALL GAIN
HALL OFFSET
HALL REF
Q252
HALL GAIN CONTROL
D3.2V
ZM RST SENS1
LENS RST LED
FC RST SENS
IC252
ZOOM MOTOR DRIVE
FOCUS MOTOR DRIVE
IC255
ZOOM/FOCUS PRE DRIVE
CL
XRST PDR
XCS SYSTEM
MEMI VD
D 3.2V
MT5.0V
IC117 (1/2)
VTR/CAMERA CONTROL
EVER 3.15V
20MHz
IC117 (40) REC/PB
X1751 20MHz
MODE CONTROL (SEE PAGE 3-22)
26μsec
IC117 (45) CAMERA REC
AUDIO (SEE PAGE 3-24)
IC119
NTSC 33msec PAL 40msec
IC117 (93), (95) REC
CAMERA/VIDEO (SEE PAGE 3-11)
IC116
EEPROM
IC120 (1/2)
SP/LP DET
CLOG DET
Q1751
BUFFER
IC122 (1/3)
LOADING MOTOR DRIVE
VTR UNREG
IC122 TAPE TOP/END DETECT
IC122 (1/3)
WAVE SHAPER
LED DRIVE
Q1854
CN105
CN103
CN102
M903 LOADING MOTOR
MODE SWITCH
DEW SENSOR
D001 TAPE LED
Q001 TAPE TOP SENSOR
Q002 TAPE END SENSOR
H001 S REEL SENSOR
H002 T REEL SENSOR
S002
S001 CC DOWN SW

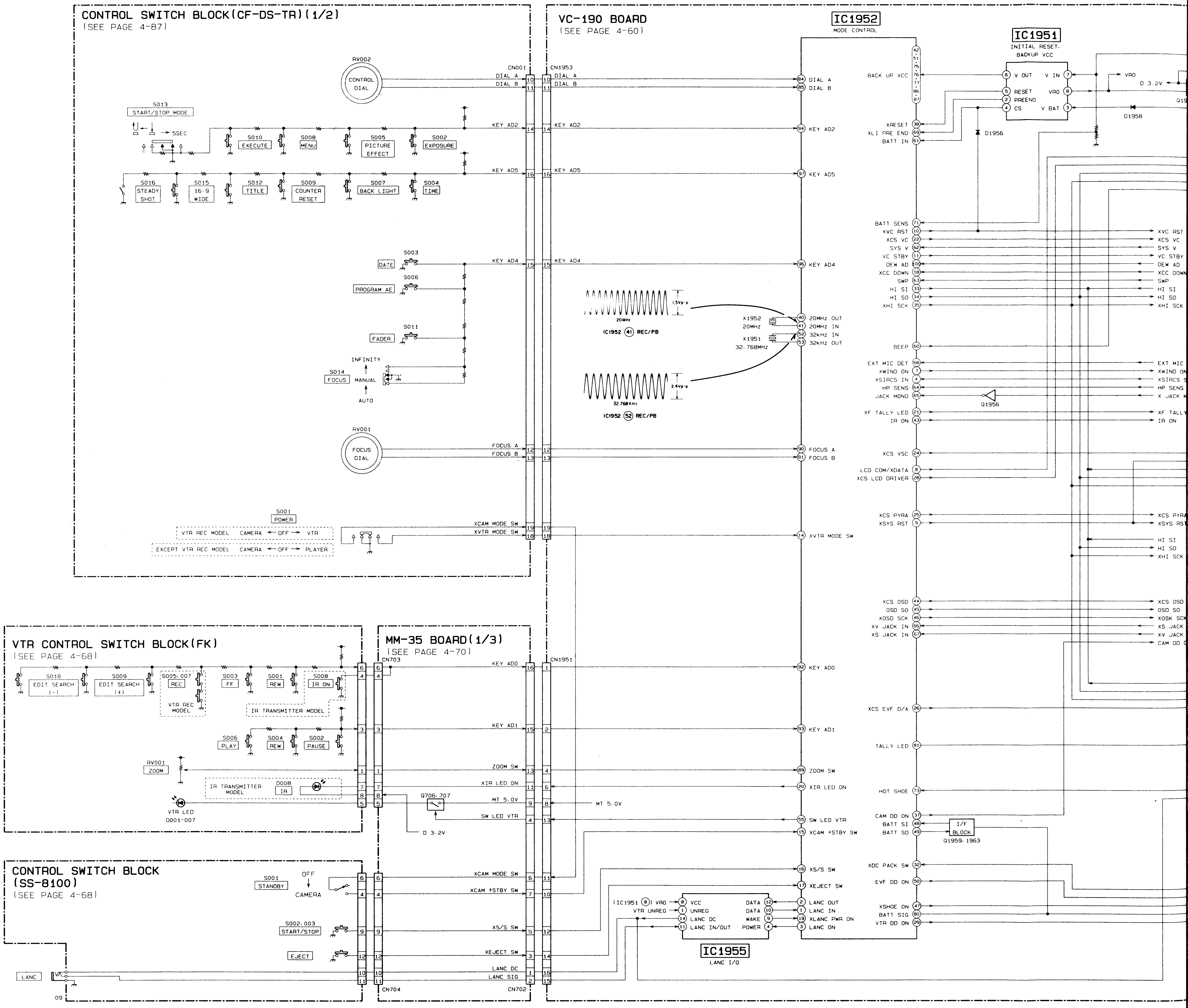
3-5. SERVO BLOCK DIAGRAM

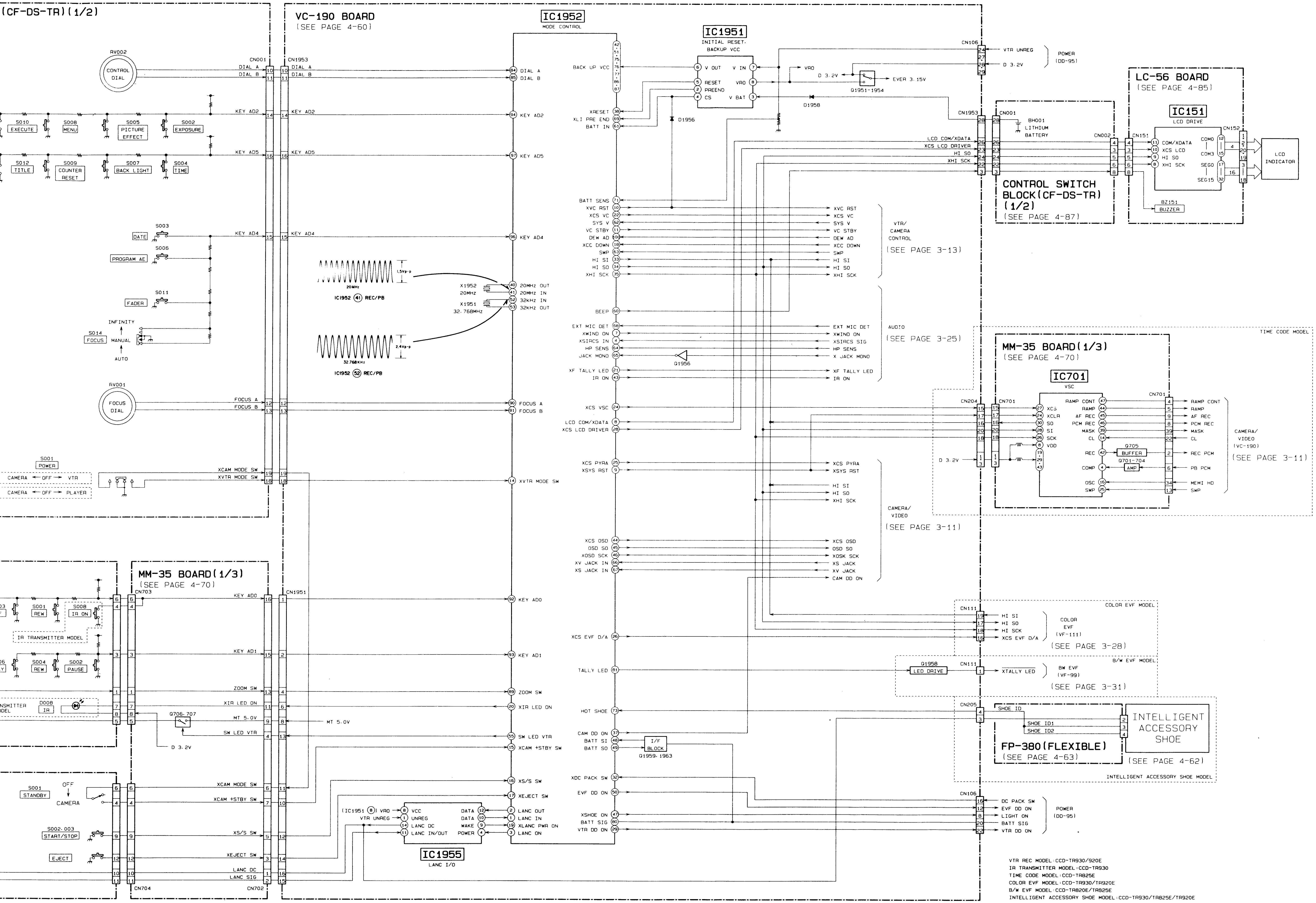


VC-190 BOARD
(SEE PAGE 4-43, 50)
DD-95 BOARD
(SEE PAGE 4-103)
B-MECHA (1/2)
(SEE PAGE 4-47)
DRUM
FG
PG
D FG
FG/PG COM
D PG
CN104
IC121 (1/2)
DRUM FG/PG WAVE SHAPER
LPF
WAVE SHAPER
V REF
WAVE SHAPER
CAPSTAN FG
IC001 (2/2)
CFG Vcc
CFG (+)
CFG GND
CFG (-)
CAPSTAN FG WAVE SHAPER
VCC1
OFFSET ADJ
CN103
D 3.2V
CAP FG
CFG DUTY
IC108 (21)
CAMERA/VIDEO
(SEE PAGE 3-11)
CN207
CPC
(FOR CHECK)
IC117 (1/2)
SERVO
DRUM SERVO
DRUM FG
DRUM PWM
DRUM PG
CAPSTAN SERVO
CAP FG
CAP PWM
X1752
11.895MHz
(NTSC)
11.719MHz
(PAL)
OSCO
OSCI
REF PILOT
ATF ERR AD
VTR/CAMERA CONTROL
CFG HMS
VDD
A VREF
A VDD
VDD
VDD VPP
EVER 3.15V
XCS ATF
VC SO
VC SCK
ATF STBY
DRUM ON
CAP ON
CAP FWD
RP PB MODE
RP PB
ATF 5.9M
IC119
IC122 (1/4)
LPF
PROTECT
0.29V
ATT
Q1851, 1852
BUFFER
DRUM ERROR
CAP ERROR
CAP ON
CN106
CN502
IC501 (1/2)
DRUM/CAPSTAN PWM DRIVE
SHORT CIRCUIT PROTECT
PWM
SWITCHING DRIVE
OSC
VTR D/D ON
(CN502 (22))
OUTPUT VCC 56
MT UNTEG
MT UNREG
Q502 SWITCHING
Q501 SWITCHING
IC120 (1/2)
ATF SERVO
REC/PB
REF PILOT
CLK 5.9M
REC ATF
LPF
Q1751
BUFF
SPIN
PB RF
LPF. AMP
MODULATOR
16KHz BPF
46KHz BPF
DET
V REF
ERR
DVDD
AVDD
CS
SIN
SCLK
STBY
CAMERA/VIDEO
(SEE PAGE 3-11)
IC121 (18) REC/PB
IC117 (57) REC/PB
IC117 (44) REC/PB
IC117 (56) REC/PB
IC117 (43) REC/PB
IC117 (58) REC/PB
IC121 (11) REC/PB
IC117 (67) REC/PB
IC117 (69) REC/PB
IC120 (13) REC
CH1: IC120 (31) PB
CH2: IC102 (3) (TRIG)
IC120 (2) PB (PAL)
IC120 (2) PB (NTSC)
IC120 (3) PB (NTSC)
IC120 (3) PB (PAL)
IC501 (64) REC/PB
NTSC MODEL: CCD-TR930
PAL MODEL: CCD-TR820E/TR825E/TR920E
09

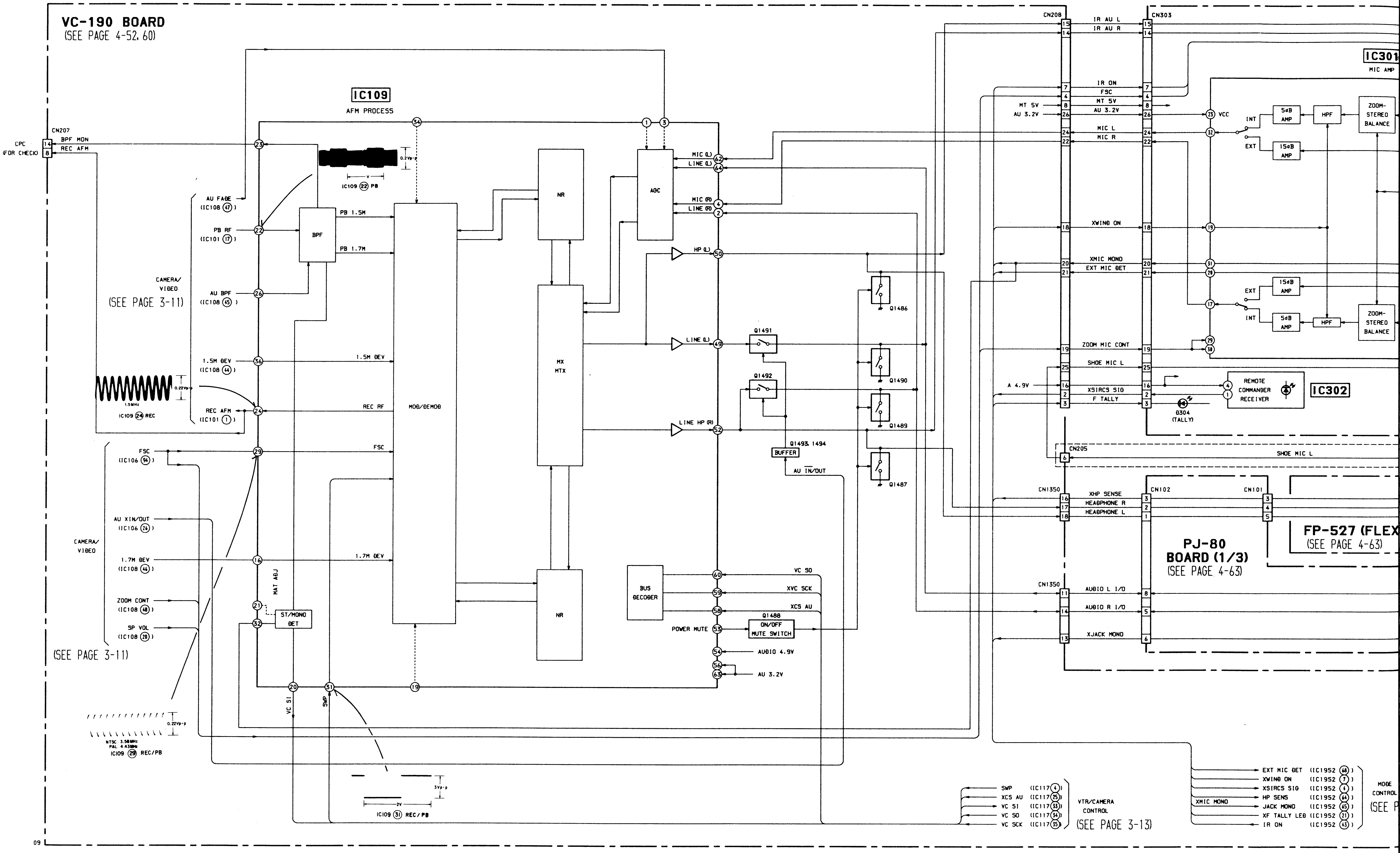

B-MECHA (1/2)
(SEE PAGE 4-47)
IC501 (1/2)
DRUM/CAPSTAN PWM DRIVE
SHORT CIRCUIT PROTECT
PWM
SWITCHING DRIVE
OSC
OUTPUT VCC 56
NTSC 459kHz
PAL 448kHz
IC501 64 REC/PB
IC501 4 REC/PB
0.7Vp-p
MT UNTEG
MT UNREG
Q502 SWITCHING
Q501 SWITCHING
D502
D501
L505
L504
CN502
CN106
DRUM VS
VTR UNREG
D 3.2V
Vcc 2
Vcc 1
COM
VS
DRUM ON
STBY
CONTROL LOGIC
U IN
V IN
W IN
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
U
V
W
I COM
IC121 (1/2)
DRUM MOTOR DRIVE
R1851-1853
DRUM DRIVE CURRENT SENS
NTSC:5.6msec
PAL:6.8msec
NTSC:1.25Vp-p
PAL:1Vp-p
IC121 1, 2, 29 REC/PB
CN104
COM
M901
DRUM MOTOR
IC120 2 PB(NTSC)
4V
0.5Vp-p
CN103
CAP VS
VTR UNREG
VCC 2
CAP ON
STANDBY
CAP FWD
FRC
IC001 (1/2)
CAPSTAN MOTOR DRIVE
Vcc
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
120° LOGIC
STBY
POWER OFF
HE POWER
VH+
VH-
C HALL Vcc
C HALL GND
CAP U
CAP V
CAP W
M902
CAPSTAN MOTOR
V REF
ERR
DVDD
AVDD
D 3.2V

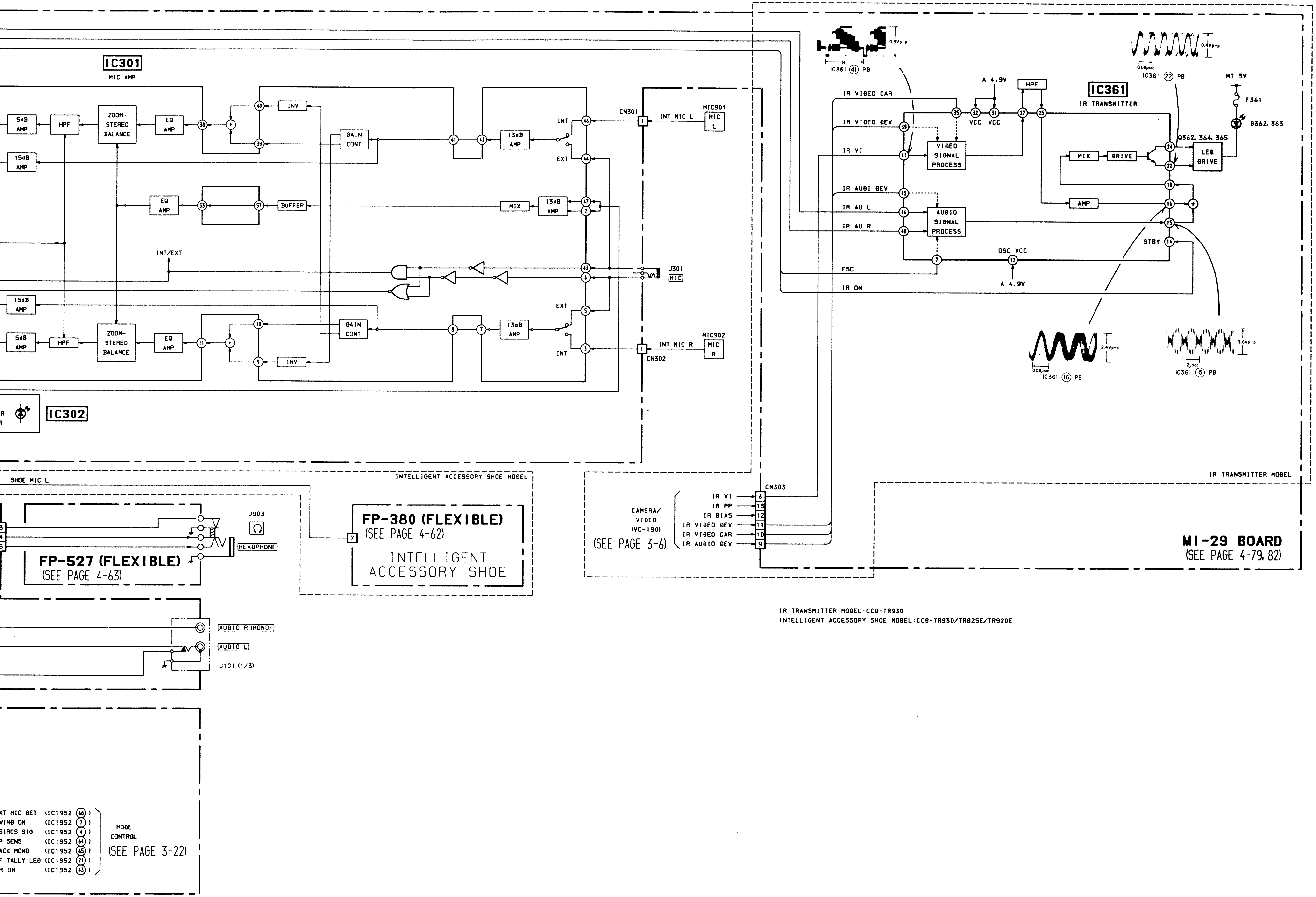
3-6. MODE CONTROL BLOCK DIAGRAM


CONTROL SWITCH BLOCK(CF-DS-TR)(1/2)
(SEE PAGE 4-87)
RV002
CONTROL DIAL
S013
START/STOP MODE
5SEC
S010 EXECUTE
S008 MENU
S005 PICTURE EFFECT
S002 EXPOSURE
S016 STEADY SHOT
S015 16:9 WIDE
S012 TITLE
S009 COUNTER RESET
S007 BACK LIGHT
S004 TIME
S003 DATE
S006 PROGRAM AE
S011 FADER
S014 FOCUS
INFINITY
MANUAL
AUTO
RV001
FOCUS DIAL
S001 POWER
VTR REC MODEL CAMERA ← OFF → VTR
EXCEPT VTR REC MODEL CAMERA ← OFF → PLAYER
CN001
DIAL A
DIAL B
KEY AD2
KEY AD5
KEY AD4
FOCUS A
FOCUS B
XCAM MODE SW
XVTR MODE SW
VC-190 BOARD
(SEE PAGE 4-60)
CN1953
IC1952
MODE CONTROL
DIAL A
DIAL B
KEY AD2
KEY AD5
KEY AD4
1.5Vp-p
20MHz
IC1952 (41) REC/PB
2.4Vp-p
32.768KHz
IC1952 (52) REC/PB
X1952 20MHz
X1951 32.768MHz
20MHz OUT
20MHz IN
32kHz IN
32kHz OUT
FOCUS A
FOCUS B
XVTR MODE SW
KEY AD0
KEY AD1
ZOOM SW
XIR LED ON
SW LED VTR
XCAM +STBY SW
XS/S SW
XEJECT SW
LANC OUT
LANC IN
XLANC PWR ON
LANC ON
IC1951
INITIAL RESET, BACKUP VCC
V OUT
V IN
RESET
VRO
PREEND
CS
V BAT
VRO
D 3.2V
D1958
D1956
BACK UP VCC
XRESET
XLI PRE END
BATT IN
BATT SENS
XVC RST
XCS VC
SYS V
VC STBY
DEW AD
XCC DOWN
SWP
HI SI
HI SO
XHI SCK
BEEP
EXT MIC DET
XWIND ON
XSIRCS IN
HP SENS
JACK MONO
Q1956
XF TALLY LED
IR ON
XCS VSC
LCD COM/XDATA
XCS LCD DRIVER
XCS PYRA
XSYS RST
XCS OSD
OSD SO
XOSD SCK
XV JACK IN
XS JACK IN
CAM DD ON
XCS EVF D/A
TALLY LED
HOT SHOE
CAM DD ON
BATT SI
BATT SO
I/F BLOCK
Q1959-1963
XDC PACK SW
EVF DD ON
XSHOE ON
BATT SIG
VTR DD ON
IC1955
LANC I/O
(IC1951 (8)) VRO
VTR UNREG
VCC
UNREG
LANC DC
LANC IN/OUT
DATA
DATA
WAKE
POWER
VTR CONTROL SWITCH BLOCK(FK)
(SEE PAGE 4-68)
S010 EDIT SEARCH (-)
S009 EDIT SEARCH (+)
S005, 007 REC
VTR REC MODEL
S003 FF
S001 REW
S008 IR ON
IR TRANSMITTER MODEL
S006 PLAY
S004 REW
S002 PAUSE
RV001 ZOOM
IR TRANSMITTER MODEL
D008 IR
VTR LED
D001-007
MM-35 BOARD(1/3)
(SEE PAGE 4-70)
CN703
KEY AD0
KEY AD1
ZOOM SW
XIR LED ON
MT 5.0V
SW LED VTR
Q706, 707
D 3.2V
MT 5.0V
CN1951
CONTROL SWITCH BLOCK (SS-8100)
(SEE PAGE 4-68)
S001 STANDBY
OFF
CAMERA
S002, 003 START/STOP
EJECT
LANC
XCAM MODE SW
XCAM +STBY SW
XS/S SW
XEJECT SW
LANC DC
LANC SIG
CN704
CN702
09

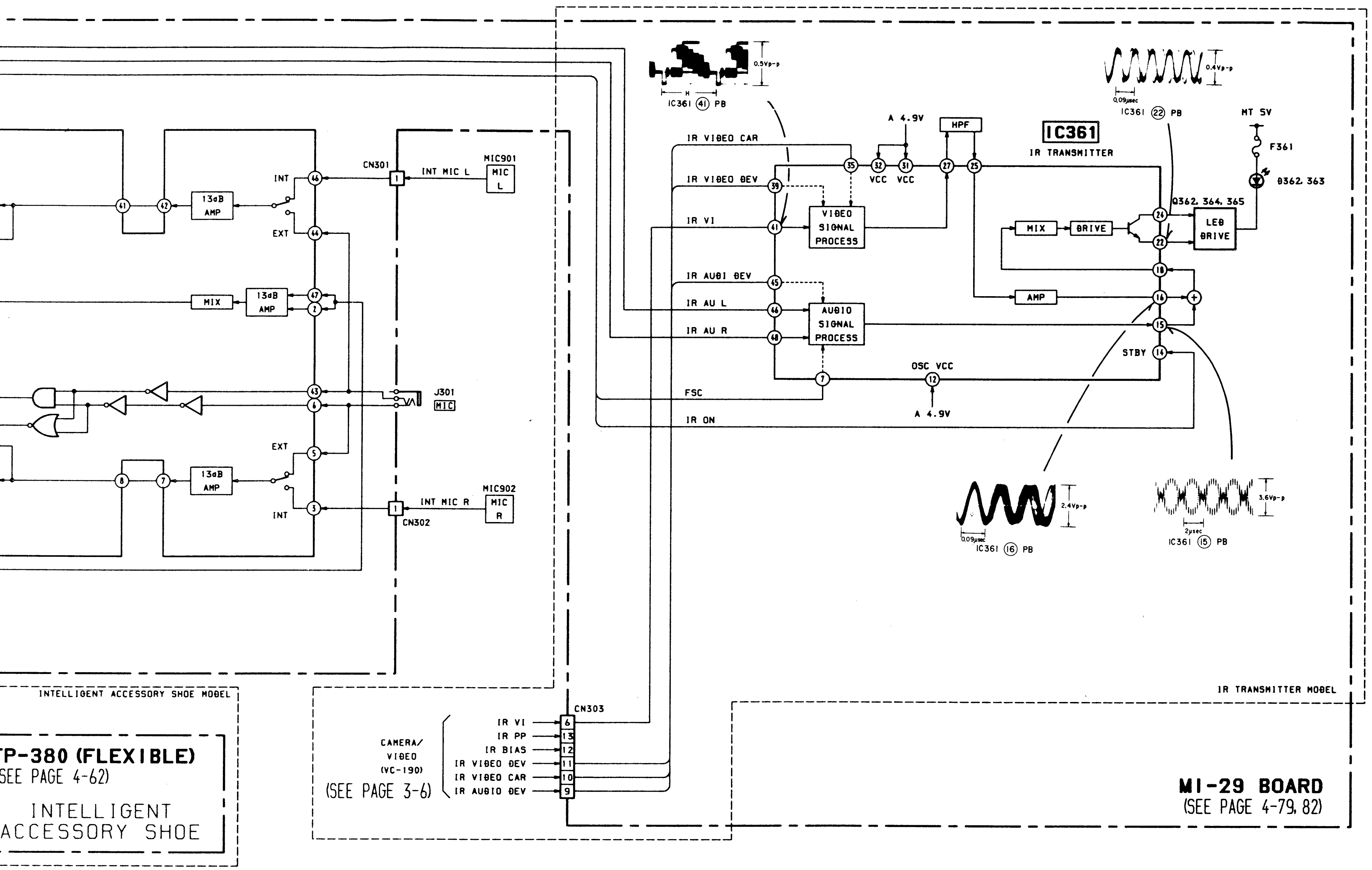

(CF-DS-TR)(1/2)
VC-190 BOARD
(SEE PAGE 4-60)
IC1952
MODE CONTROL
IC1951
INITIAL RESET, BACKUP VCC
V OUT
V IN
RESET
PREEND
CS
VRO
V BAT
Q1951-1954
D1956
D1958
VRO
D 3.2V
EVER 3.15V
BACK UP VCC
XRESET
XLI PRE END
BATT IN
RV002
CONTROL DIAL
CN001
DIAL A
DIAL B
CN1953
KEY AD2
KEY AD5
KEY AD4
S010 EXECUTE
S008 MENU
S005 PICTURE EFFECT
S002 EXPOSURE
S012 TITLE
S009 COUNTER RESET
S007 BACK LIGHT
S004 TIME
S003 DATE
S006 PROGRAM AE
S011 FADER
S014 FOCUS
INFINITY
MANUAL
AUTO
RV001
FOCUS DIAL
FOCUS A
FOCUS B
S001 POWER
CAMERA ← OFF → VTR
CAMERA ← OFF → PLAYER
XCAM MODE SW
XVTR MODE SW
20MHz
IC1952 (41) REC/PB
1.5Vp-p
32.768kHz
IC1952 (52) REC/PB
2.4Vp-p
X1952 20MHz
X1951 32.768MHz
20MHz OUT
20MHz IN
32kHz IN
32kHz OUT
BATT SENS
XVC RST
XCS VC
SYS V
VC STBY
DEW AD
XCC DOWN
SWP
HI SI
HI SO
XHI SCK
VTR/CAMERA CONTROL
(SEE PAGE 3-13)
BEEP
EXT MIC DET
XWIND ON
XSIRCS IN
XSIRCS SIG
HP SENS
JACK MONO
X JACK MONO
XF TALLY LED
IR ON
AUDIO
(SEE PAGE 3-25)
Q1956
XCS VSC
LCD COM/XDATA
XCS LCD DRIVER
XCS PYRA
XSYS RST
CAMERA/VIDEO
(SEE PAGE 3-11)
XCS OSD
OSD SO
XOSD SCK
XOSK SCK
XV JACK IN
XS JACK IN
XS JACK
XV JACK
CAM DD ON
XCS EVF D/A
TALLY LED
HOT SHOE
CAM DD ON
BATT SI
BATT SO
I/F BLOCK
Q1959-1963
XDC PACK SW
EVF DD ON
XSHOE ON
BATT SIG
VTR DD ON
KEY AD0
KEY AD1
ZOOM SW
XIR LED ON
SW LED VTR
XCAM +STBY SW
XS/S SW
XEJECT SW
LANC OUT
LANC IN
XLANC PWR ON
LANC ON
XVTR MODE SW
MT 5.0V
CN106
VTR UNREG
D 3.2V
POWER (DD-95)
LC-56 BOARD
(SEE PAGE 4-85)
IC151
LCD DRIVE
CN151
CN152
COM/XDATA
XCS LCD
HI SO
XHI SCK
COM0
COM3
SEG0
SEG15
LCD INDICATOR
CN1953
CN001
BH001 LITHIUM BATTERY
CN002
CONTROL SWITCH BLOCK(CF-DS-TR)(1/2)
(SEE PAGE 4-87)
BZ151 BUZZER
TIME CODE MODEL
MM-35 BOARD(1/3)
(SEE PAGE 4-70)
IC701
VSC
CN204
CN701
XCS
XCLR
SO
SI
SCK
VDD
RAMP CONT
RAMP
AF REC
PCM REC
MASK
CL
REC
COMP
OSC
SWP
Q705 BUFFER
Q701-704 AMP
REC PCM
PB PCM
MEMI HD
CAMERA/VIDEO (VC-190)
(SEE PAGE 3-11)
COLOR EVF MODEL
CN111
HI SI
HI SO
HI SCK
XCS EVF D/A
COLOR EVF (VF-111)
(SEE PAGE 3-28)
B/W EVF MODEL
Q1958 LED DRIVE
XTALLY LED
BW EVF (VF-99)
(SEE PAGE 3-31)
CN205
SHOE ID
SHOE ID1
SHOE ID2
FP-380(FLEXIBLE)
(SEE PAGE 4-63)
INTELLIGENT ACCESSORY SHOE
(SEE PAGE 4-62)
INTELLIGENT ACCESSORY SHOE MODEL
CN106
DC PACK SW
EVF DD ON
LIGHT ON
BATT SIG
VTR DD ON
POWER (DD-95)
MM-35 BOARD(1/3)
(SEE PAGE 4-70)
CN703
S001 REW
S008 IR ON
IR TRANSMITTER MODEL
S004 REW
S002 PAUSE
D008 IR
Q706, 707
D 3.2V
S001 STANDBY
OFF
CAMERA
S002, 003 START/STOP
EJECT
LANC DC
LANC SIG
CN704
CN702
CN1951
(IC1951 (8) VRO
VTR UNREG
VCC
UNREG
LANC DC
LANC IN/OUT
DATA
WAKE
POWER
IC1955
LANC I/O
VTR REC MODEL : CCD-TR930/920E
IR TRANSMITTER MODEL : CCD-TR930
TIME CODE MODEL : CCD-TR825E
COLOR EVF MODEL : CCD-TR930/TR920E
B/W EVF MODEL : CCD-TR820E/TR825E
INTELLIGENT ACCESSORY SHOE MODEL : CCD-TR930/TR825E/TR920E

3-7. AUDIO BLOCK DIAGRAM


VC-190 BOARD
(SEE PAGE 4-52, 60)
IC109
AFM PROCESS
CN207
CPC (FOR CHECK)
BPF MON
REC AFM
AU FADE (IC108 47)
PB RF (IC101 17)
CAMERA/VIDEO
(SEE PAGE 3-11)
AU BPF (IC108 45)
1.5M DEV (IC108 44)
REC AFM (IC101 1)
IC109 22 PB
0.2Vp-p
1.5MHz
0.22Vp-p
IC109 24 REC
BPF
PB 1.5M
PB 1.7M
1.5M DEV
REC RF
FSC
1.7M DEV
MOD/DEMOD
NR
MX MTX
NR
AGC
MIC (L)
LINE (L)
MIC (R)
LINE (R)
HP (L)
LINE (L)
LINE HP (R)
Q1491
Q1492
Q1493, 1494
BUFFER
AU IN/OUT
Q1486
Q1490
Q1489
Q1487
FSC (IC106 94)
AU XIN/OUT (IC106 26)
CAMERA/VIDEO
1.7M DEV (IC108 44)
ZOOM CONT (IC108 48)
SP VOL (IC108 28)
(SEE PAGE 3-11)
MAT ADJ
ST/MONO DET
BUS DECODER
VC SO
XVC SCK
XCS AU
Q1488
ON/OFF MUTE SWITCH
POWER MUTE
AUDIO 4.9V
AU 3.2V
VC SI
SWP
0.22Vp-p
NTSC 3.58MHz
PAL 4.43MHz
IC109 29 REC/PB
3Vp-p
2V
IC109 31 REC/PB
SWP (IC117 4)
XCS AU (IC117 25)
VC SI (IC117 33)
VC SO (IC117 34)
VC SCK (IC117 35)
VTR/CAMERA CONTROL
(SEE PAGE 3-13)
CN208
CN303
IR AU L
IR AU R
IR ON
FSC
MT 5V
AU 3.2V
MIC L
MIC R
XWIND ON
XMIC MONO
EXT MIC DET
ZOOM MIC CONT
SHOE MIC L
A 4.9V
XSIRCS SIG
F TALLY
IC301
MIC AMP
VCC
INT
EXT
5dB AMP
15dB AMP
HPF
ZOOM-STEREO BALANCE
REMOTE COMMANDER RECEIVER
IC302
D304 (TALLY)
CN205
SHOE MIC L
CN1350
XHP SENSE
HEADPHONE R
HEADPHONE L
CN102
CN101
FP-527 (FLEX
(SEE PAGE 4-63)
PJ-80 BOARD (1/3)
(SEE PAGE 4-63)
AUDIO L I/O
AUDIO R I/O
XJACK MONO
EXT MIC DET (IC1952 68)
XWIND ON (IC1952 7)
XSIRCS SIG (IC1952 4)
HP SENS (IC1952 64)
JACK MONO (IC1952 65)
XF TALLY LED (IC1952 21)
IR ON (IC1952 43)
XMIC MONO
MODE CONTROL
(SEE P

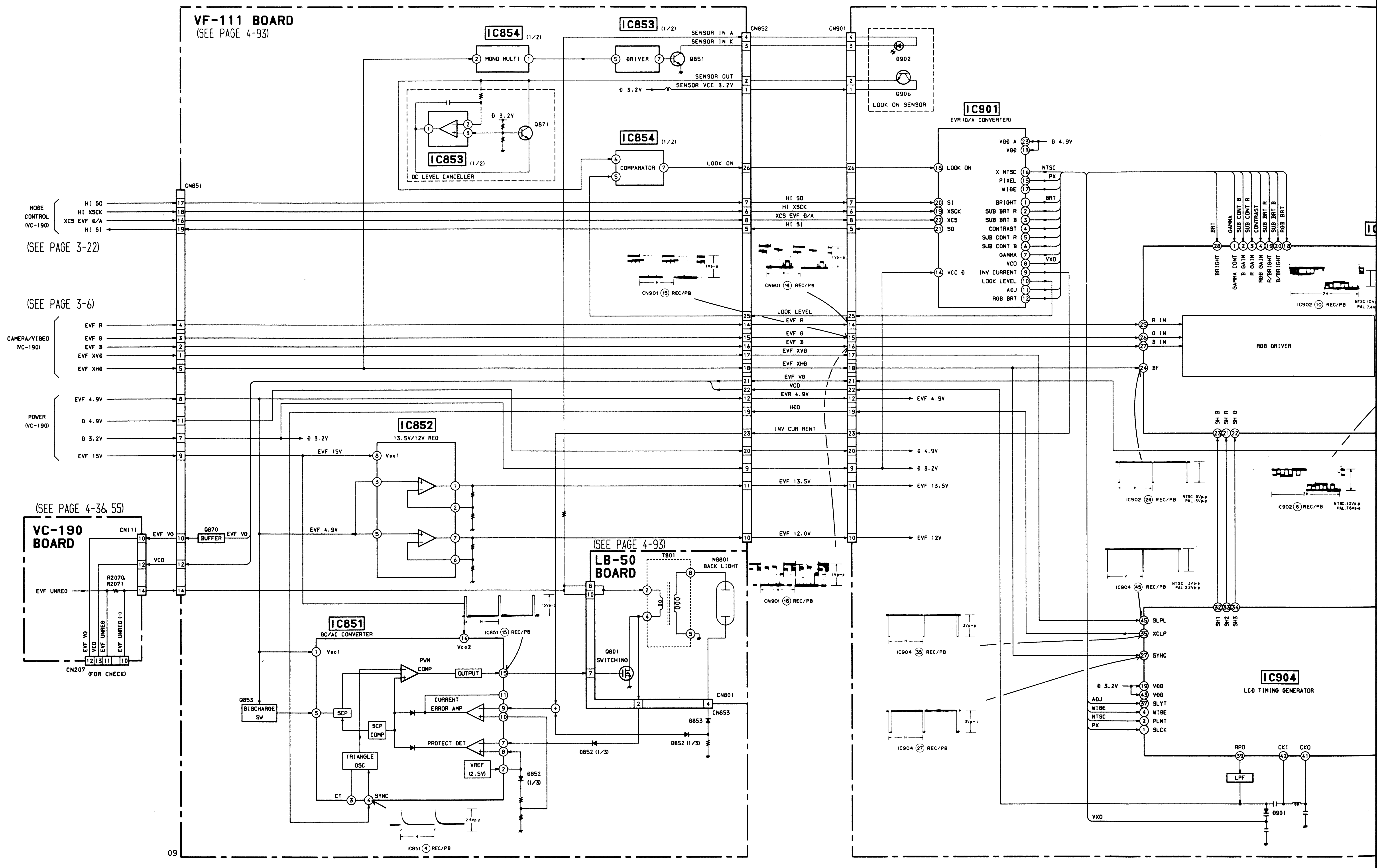

IC301
MIC AMP
5dB AMP
HPF
ZOOM-STEREO BALANCE
EQ AMP
INV
GAIN CONT
13dB AMP
INT
EXT
CN301
INT MIC L
MIC901
MIC L
15dB AMP
EQ AMP
BUFFER
MIX
13dB AMP
INT/EXT
J301
MIC
15dB AMP
5dB AMP
HPF
ZOOM-STEREO BALANCE
EQ AMP
GAIN CONT
13dB AMP
INV
EXT
INT
INT MIC R
MIC902
MIC R
CN302
IC302
IC361 (41) PB
0.5Vp-p
H
IC361 (22) PB
0.4Vp-p
0.09μsec
A 4.9V
HPF
IC361
IR TRANSMITTER
MT 5V
F361
D362, 363
IR VIDEO CAR
IR VIDEO DET
IR VI
IR AUDI DET
IR AU L
IR AU R
FSC
IR ON
VCC
VCC
VIDEO SIGNAL PROCESS
AUDIO SIGNAL PROCESS
Q362, 364, 365
MIX
DRIVE
LED DRIVE
AMP
STBY
OSC VCC
A 4.9V
2.4Vp-p
0.09μsec
IC361 (16) PB
3.6Vp-p
2μsec
IC361 (15) PB
IR TRANSMITTER MODEL
CN303
CAMERA/VIDEO (VC-190)
(SEE PAGE 3-6)
IR VI
IR PP
IR BIAS
IR VIDEO DET
IR VIDEO CAR
IR AUDIO DET
MI-29 BOARD
(SEE PAGE 4-79, 82)
SHOE MIC L
INTELLIGENT ACCESSORY SHOE MODEL
J903
HEADPHONE
FP-527 (FLEXIBLE)
(SEE PAGE 4-63)
FP-380 (FLEXIBLE)
(SEE PAGE 4-62)
INTELLIGENT ACCESSORY SHOE
AUDIO R (MONO)
AUDIO L
J101 (1/3)
XT MIC DET (IC1952 (68))
WIND ON (IC1952 (7))
SIRCS SIG (IC1952 (4))
P SENS (IC1952 (64))
ACK MONO (IC1952 (65))
F TALLY LED (IC1952 (21))
R ON (IC1952 (43))
MODE CONTROL
(SEE PAGE 3-22)

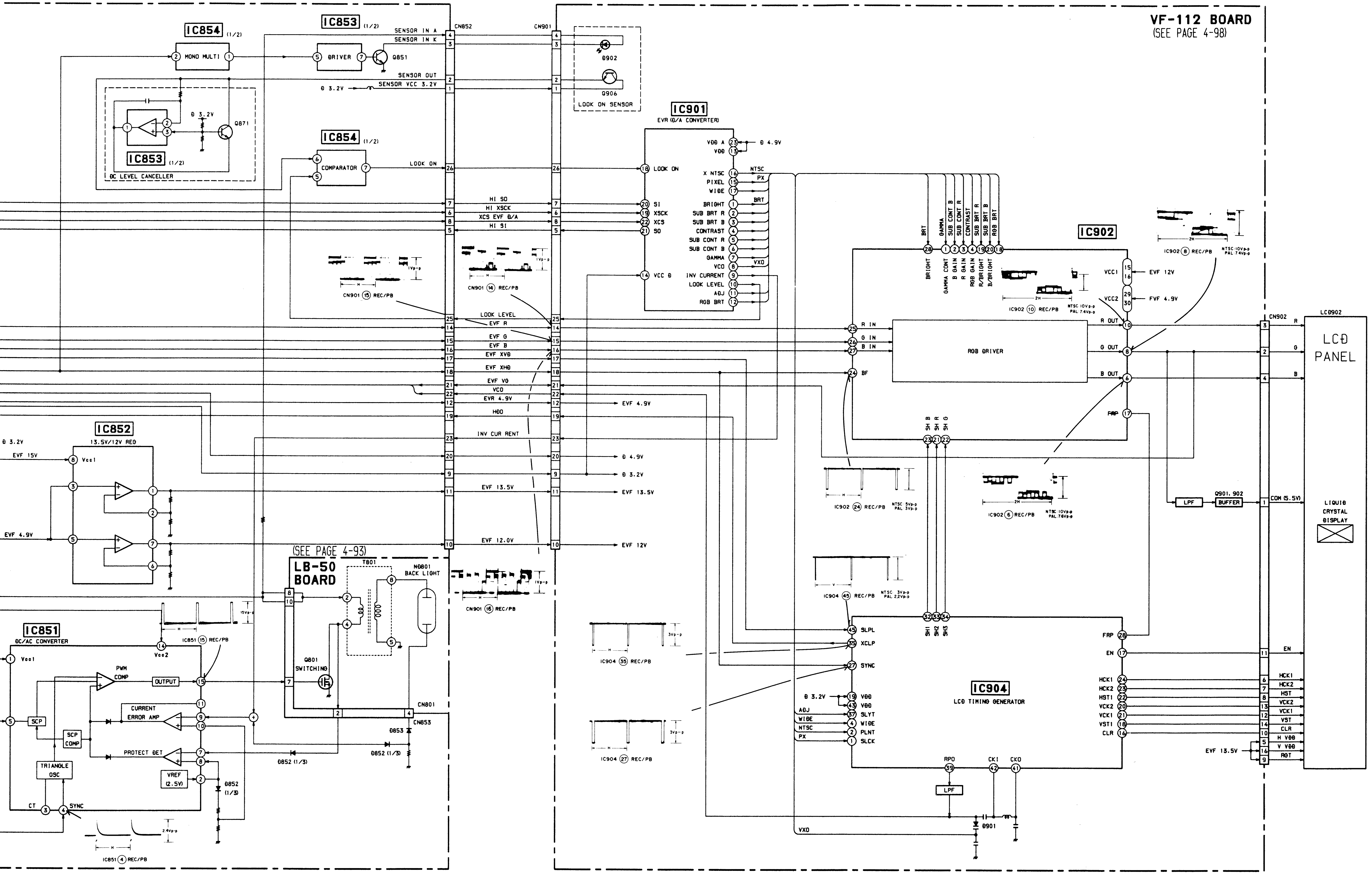
IR TRANSMITTER MODEL:CCD-TR930
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR930/TR825E/TR920E


IC361 ㊶ PB
0.5Vp-p
H
IR VIDEO CAR
IR VIDEO DEV
IR VI
IR AUDI DEV
IR AU L
IR AU R
FSC
IR ON
A 4.9V
VCC VCC
HPF
VIDEO SIGNAL PROCESS
AUDIO SIGNAL PROCESS
OSC VCC
A 4.9V
IC361
IR TRANSMITTER
0.4Vp-p
0.09μsec
IC361 ㉒ PB
MT 5V
F361
D362, 363
Q362, 364, 365
MIX
DRIVE
LED DRIVE
AMP
STBY
2.4Vp-p
0.09μsec
IC361 ⑯ PB
3.6Vp-p
2μsec
IC361 ⑮ PB
IR TRANSMITTER MODEL
MIC901 MIC L
INT MIC L
CN301
INT
EXT
13dB AMP
MIX
13dB AMP
J301 MIC
EXT
13dB AMP
INT
MIC902 MIC R
INT MIC R
CN302
INTELLIGENT ACCESSORY SHOE MODEL
TP-380 (FLEXIBLE)
(SEE PAGE 4-62)
INTELLIGENT ACCESSORY SHOE
CAMERA/VIDEO (VC-190)
(SEE PAGE 3-6)
IR VI
IR PP
IR BIAS
IR VIDEO DEV
IR VIDEO CAR
IR AUDIO DEV
CN303
MI-29 BOARD
(SEE PAGE 4-79, 82)

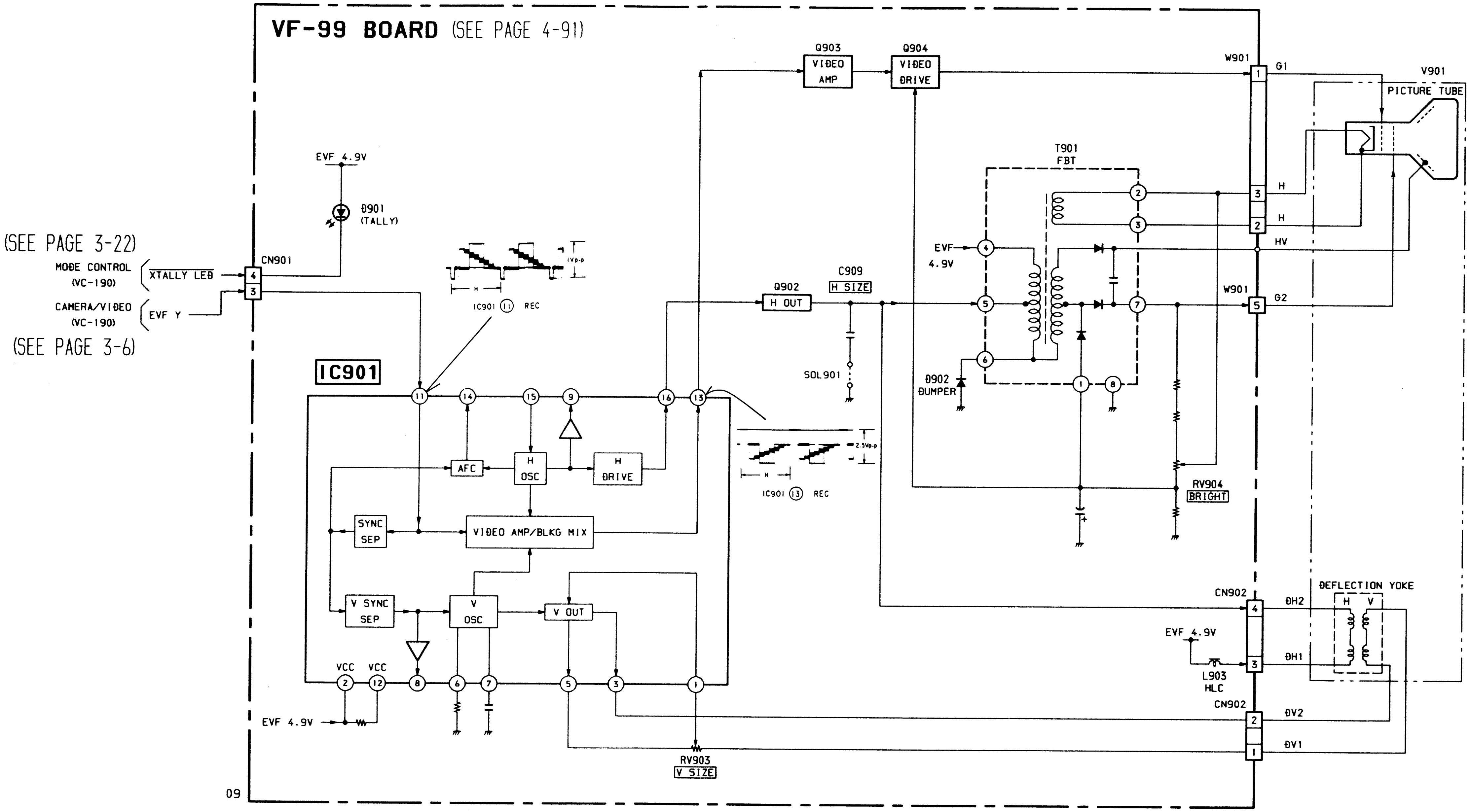
IR TRANSMITTER MODEL:CCD-TR930
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR930/TR825E/TR920E

3-8. COLOR EVF BLOCK DIAGRAM

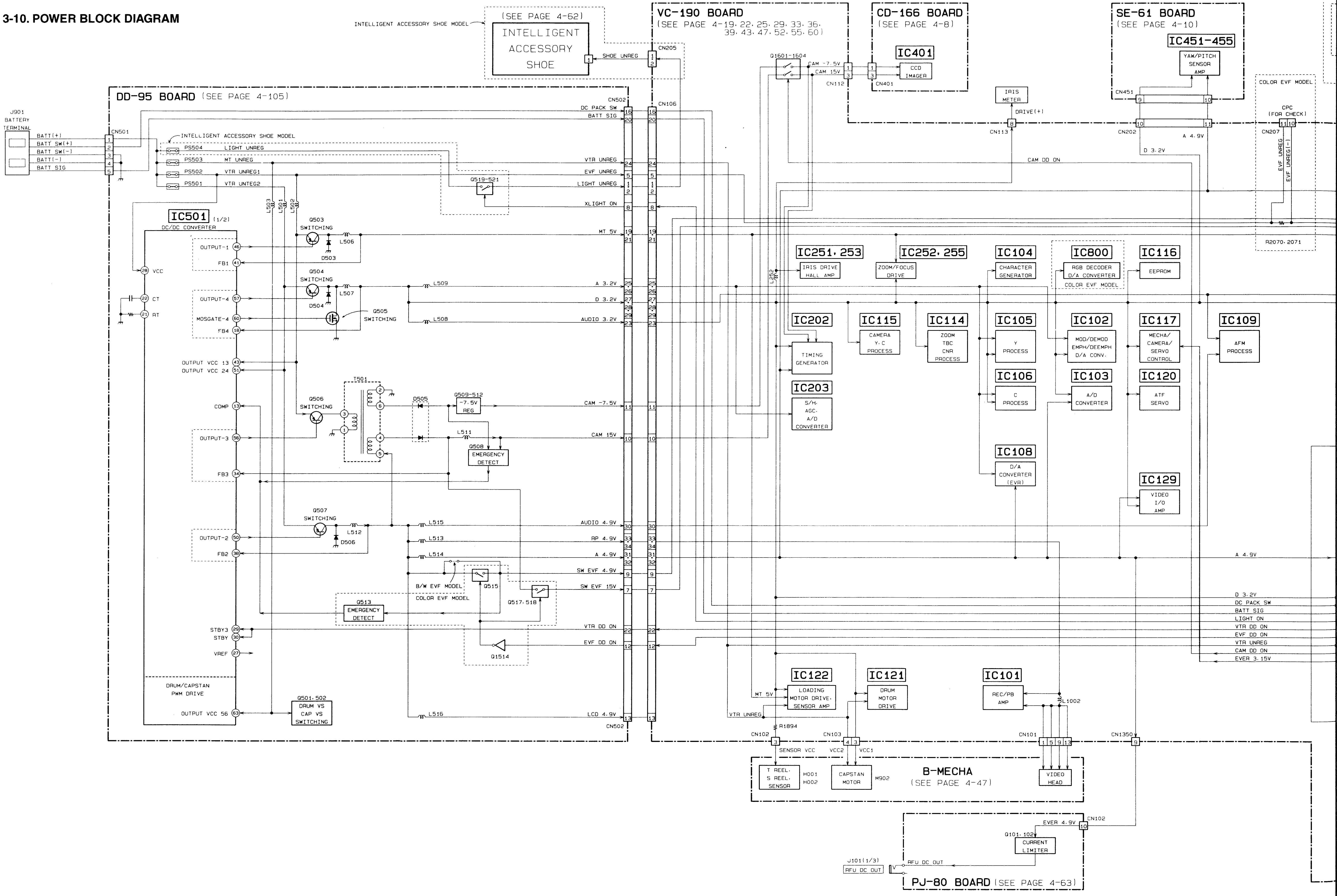

VF-111 BOARD
(SEE PAGE 4-93)
IC854 (1/2)
MONO MULTI
IC853 (1/2)
DRIVER
Q851
SENSOR IN A
SENSOR IN K
SENSOR OUT
SENSOR VCC 3.2V
D 3.2V
Q871
IC853 (1/2)
DC LEVEL CANCELLER
IC854 (1/2)
COMPARATOR
LOOK ON
CN852
CN901
D902
Q906
LOOK ON SENSOR
IC901
EVR (D/A CONVERTER)
VDD A
VDD
D 4.9V
LOOK ON
X NTSC
PIXEL
WIDE
BRIGHT
SUB BRT R
SUB BRT B
CONTRAST
SUB CONT R
SUB CONT B
GAMMA
VCO
INV CURRENT
LOOK LEVEL
ADJ
RGB BRT
SI
XSCK
XCS
SO
VCC D
NTSC
PX
BRT
VXO
CN851
MODE CONTROL (VC-190)
HI SO
HI XSCK
XCS EVF D/A
HI SI
(SEE PAGE 3-22)
(SEE PAGE 3-6)
CAMERA/VIDEO (VC-190)
EVF R
EVF G
EVF B
EVF XVD
EVF XHD
POWER (VC-190)
EVF 4.9V
D 4.9V
D 3.2V
EVF 15V
CN901 (15) REC/PB
CN901 (14) REC/PB
CN901 (16) REC/PB
1Vp-p
LOOK LEVEL
EVF VD
VCO
EVR 4.9V
HDD
INV CUR RENT
EVF 13.5V
EVF 12.0V
EVF 12V
IC852
13.5V/12V REG
Vcc1
(SEE PAGE 4-36, 55)
VC-190 BOARD
CN111
EVF VD
VCO
EVF UNREG
R2070, R2071
CN207 (FOR CHECK)
EVF VD
VCO
EVF UNREG
EVF UNREG (-)
Q870 BUFFER
(SEE PAGE 4-93)
LB-50 BOARD
T801
ND801 BACK LIGHT
Q801 SWITCHING
CN801
CN853
D853
D852 (1/3)
IC851
DC/AC CONVERTER
Vcc1
Vcc2
PWM COMP
OUTPUT
SCP
SCP COMP
CURRENT ERROR AMP
PROTECT DET
TRIANGLE OSC
VREF (2.5V)
CT
SYNC
Q853 DISCHARGE SW
IC851 (15) REC/PB
15Vp-p
IC851 (4) REC/PB
2.4Vp-p
BRIGHT
GAMMA CONT
B GAIN
R GAIN
RGB GAIN
R/BRIGHT
B/BRIGHT
SUB CONT R
SUB CONT B
CONTRAST
SUB BRT R
SUB BRT B
RGB BRT
IC902 (10) REC/PB
NTSC 10V PAL 7.4V
R IN
G IN
B IN
BF
RGB DRIVER
SH B
SH R
SH G
IC902 (24) REC/PB
NTSC 5Vp-p PAL 3Vp-p
IC902 (6) REC/PB
NTSC 10Vp-p PAL 7.6Vp-p
IC904 (45) REC/PB
NTSC 3Vp-p PAL 2.2Vp-p
SH1
SH2
SH3
IC904 (35) REC/PB
3Vp-p
IC904 (27) REC/PB
SLPL
XCLP
SYNC
IC904
LCD TIMING GENERATOR
VDD
SLYT
WIDE
PLNT
SLCK
ADJ
WIDE
NTSC
PX
RPD
CKI
CKO
LPF
D901
VXO
H
2H
V
09


VF-112 BOARD
(SEE PAGE 4-98)
IC854 (1/2)
MONO MULTI
IC853 (1/2)
DRIVER
Q851
SENSOR IN A
SENSOR IN K
SENSOR OUT
SENSOR VCC 3.2V
D 3.2V
Q871
IC853 (1/2)
DC LEVEL CANCELLER
IC854 (1/2)
COMPARATOR
LOOK ON
CN852
CN901
D902
Q906
LOOK ON SENSOR
IC901
EVR (D/A CONVERTER)
VDD A
VDD
D 4.9V
LOOK ON
X NTSC
PIXEL
WIDE
BRIGHT
SUB BRT R
SUB BRT B
CONTRAST
SUB CONT R
SUB CONT B
GAMMA
VCO
INV CURRENT
LOOK LEVEL
ADJ
RGB BRT
SI
XSCK
XCS
SO
VCC D
NTSC
PX
BRT
VXO
HI SO
HI XSCK
XCS EVF D/A
HI SI
CN901 ⑮ REC/PB
CN901 ⑭ REC/PB
1Vp-p
LOOK LEVEL
EVF R
EVF G
EVF B
EVF XVD
EVF XHD
EVF VD
VCO
EVR 4.9V
HDD
INV CUR RENT
EVF 13.5V
EVF 12.0V
EVF 4.9V
D 4.9V
D 3.2V
EVF 13.5V
EVF 12V
IC852
13.5V/12V REG
D 3.2V
EVF 15V
Vccl
EVF 4.9V
(SEE PAGE 4-93)
LB-50 BOARD
T801
ND801 BACK LIGHT
Q801 SWITCHING
CN801
CN853
D853
D852 (1/3)
CN901 ⑯ REC/PB
IC851
DC/AC CONVERTER
Vcc1
Vcc2
IC851 ⑮ REC/PB
15Vp-p
PWM COMP
OUTPUT
SCP
SCP COMP
CURRENT ERROR AMP
PROTECT DET
TRIANGLE OSC
VREF (2.5V)
CT
SYNC
2.4Vp-p
IC851 ④ REC/PB
IC902
BRT
GAMMA
SUB CONT B
SUB CONT R
CONTRAST
SUB BRT R
SUB BRT B
RGB BRT
BRIGHT
GAMMA CONT
B GAIN
R GAIN
RGB GAIN
R/BRIGHT
B/BRIGHT
VCC1
VCC2
EVF 12V
EVF 4.9V
IC902 ⑩ REC/PB
NTSC:10Vp-p PAL:7.4Vp-p
IC902 ⑧ REC/PB
NTSC:10Vp-p PAL:7.4Vp-p
2H
R IN
G IN
B IN
BF
RGB DRIVER
R OUT
G OUT
B OUT
FRP
SH B
SH R
SH G
IC902 ㉔ REC/PB
NTSC 5Vp-p PAL 3Vp-p
IC902 ⑥ REC/PB
NTSC:10Vp-p PAL:7.6Vp-p
LPF
Q901, 902 BUFFER
COM (5.5V)
CN902
LCD902
LCD PANEL
LIQUID CRYSTAL DISPLAY
R
G
B
IC904 ㊺ REC/PB
NTSC 3Vp-p PAL 2.2Vp-p
IC904 ㉟ REC/PB
3Vp-p
IC904 ㉗ REC/PB
SH1
SH2
SH3
SLPL
XCLP
SYNC
D 3.2V
VDD
VDD
SLYT
WIDE
PLNT
SLCK
ADJ
WIDE
NTSC
PX
IC904
LCD TIMING GENERATOR
FRP
EN
HCK1
HCK2
HST1
VCK2
VCK1
VST1
CLR
RPO
CKI
CKO
LPF
D901
VXO
EN
HCK1
HCK2
HST
VCK2
VCK1
VST
CLR
H VDD
V VDD
RGT
EVF 13.5V

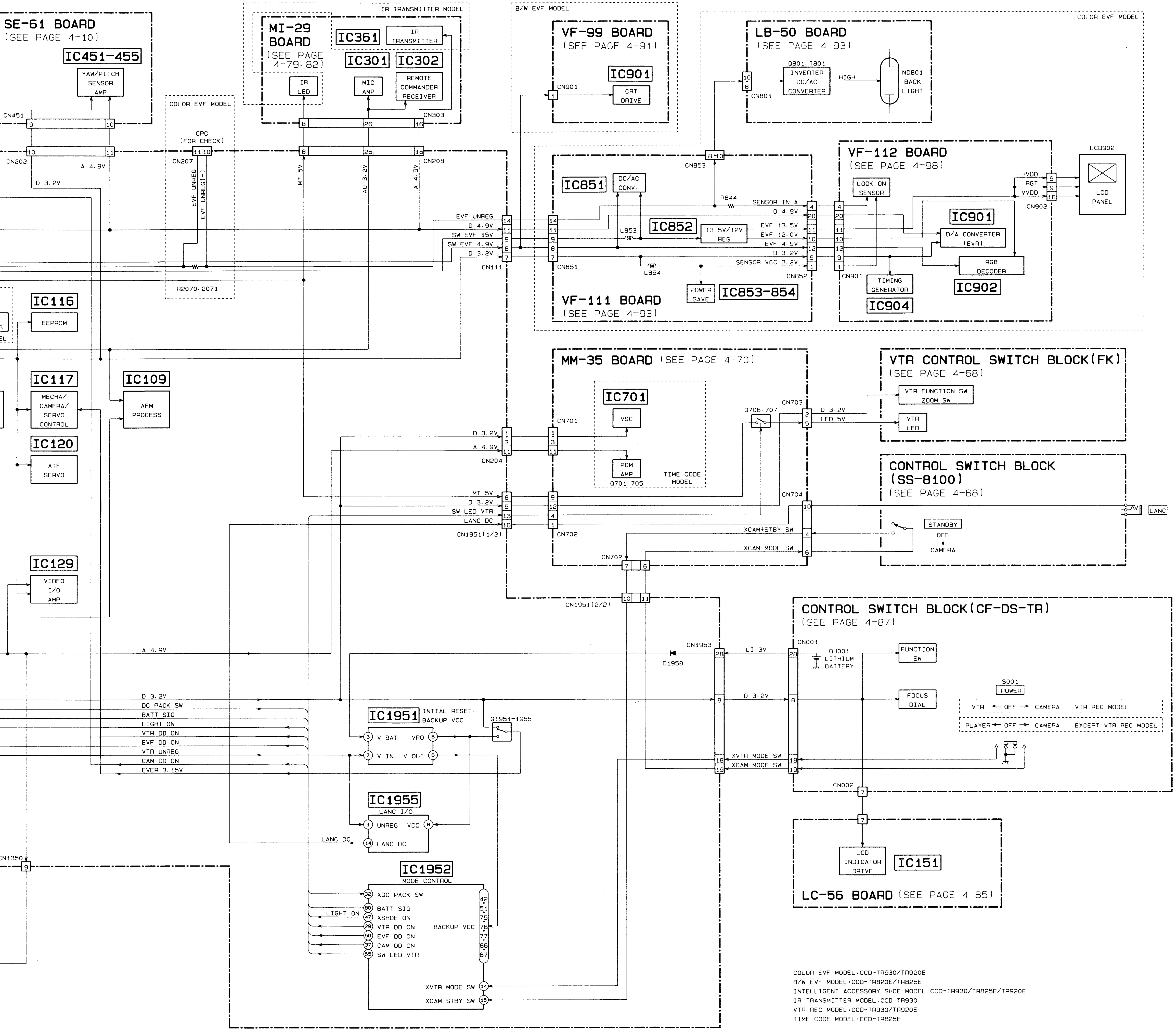
3-9. B/W EVF BLOCK DIAGRAM


VF-99 BOARD (SEE PAGE 4-91)
(SEE PAGE 3-22)
MODE CONTROL
(VC-190)
XTALLY LED
CAMERA/VIDEO
(VC-190)
EVF Y
(SEE PAGE 3-6)
CN901
EVF 4.9V
D901
(TALLY)
IC901 ⑪ REC
1Vp-p
H
IC901
AFC
H
OSC
H
DRIVE
SYNC
SEP
VIDEO AMP/BLKG MIX
V SYNC
SEP
V
OSC
V OUT
VCC
VCC
EVF 4.9V
RV903
V SIZE
09
Q903
VIDEO
AMP
Q904
VIDEO
DRIVE
Q902
H OUT
C909
H SIZE
SOL901
2.5Vp-p
IC901 ⑬ REC
T901
FBT
EVF
4.9V
D902
DUMPER
RV904
BRIGHT
W901
G1
H
H
HV
W901
G2
V901
PICTURE TUBE
DEFLECTION YOKE
H
V
CN902
DH2
EVF 4.9V
L903
HLC
DH1
CN902
DV2
DV1

3-10. POWER BLOCK DIAGRAM



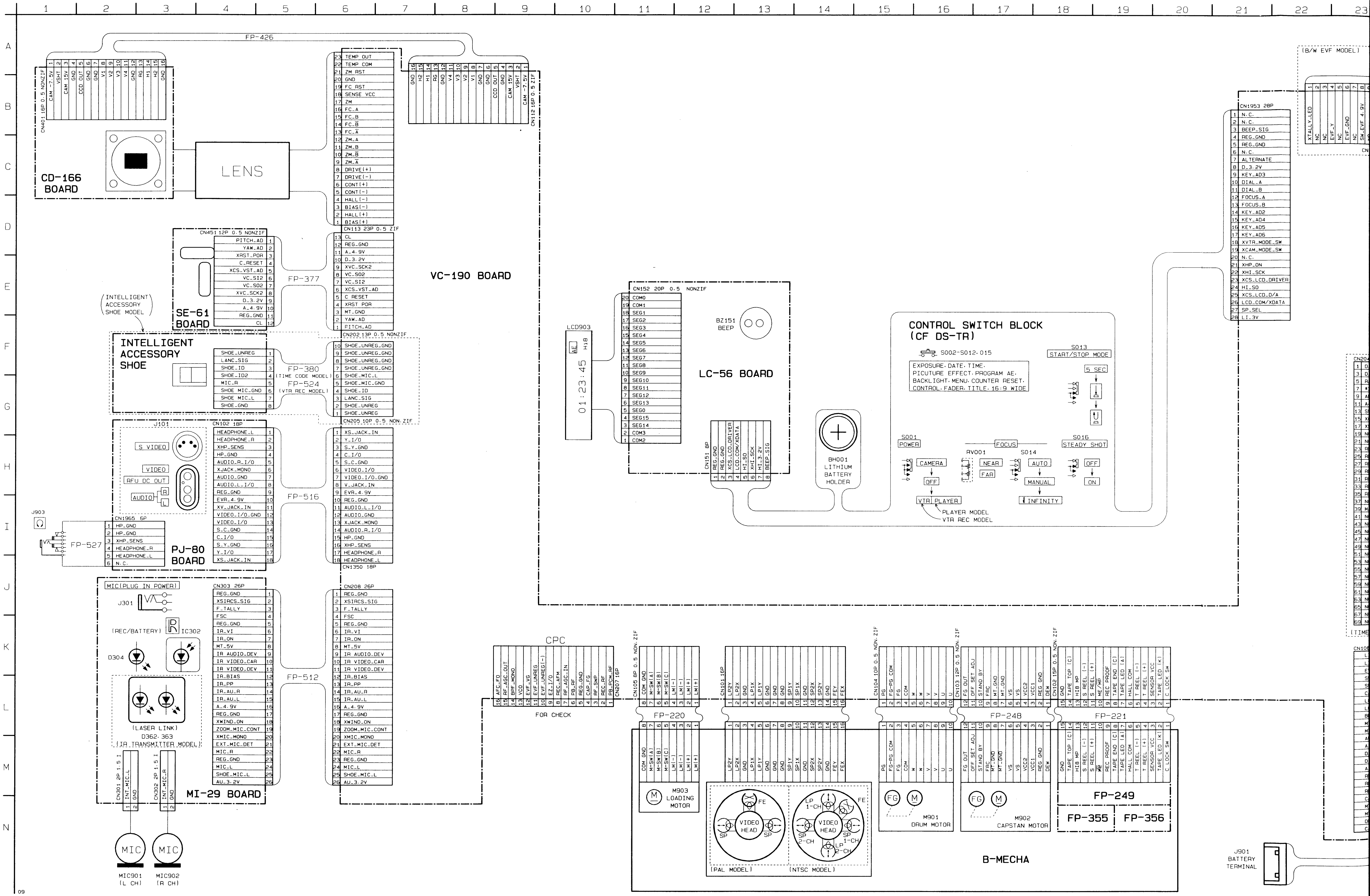
INTELLIGENT ACCESSORY SHOE MODEL
(SEE PAGE 4-62)
INTELLIGENT ACCESSORY SHOE
SHOE UNREG
VC-190 BOARD
(SEE PAGE 4-19, 22, 25, 29, 33, 36, 39, 43, 47, 52, 55, 60)
CN205
CD-166 BOARD
(SEE PAGE 4-8)
IC401
CCD IMAGER
CN401
Q1601-1604
CAM -7.5V
CAM 15V
CN112
SE-61 BOARD
(SEE PAGE 4-10)
IC451-455
YAW/PITCH SENSOR AMP
CN451
CN202
A 4.9V
D 3.2V
IRIS METER
DRIVE(+)
CN113
CAM DD ON
COLOR EVF MODEL
CPC (FOR CHECK)
CN207
EVF UNREG
EVF UNREG(-)
R2070, 2071
J901 BATTERY TERMINAL
BATT(+)
BATT SW(+)
BATT SW(-)
BATT(-)
BATT SIG
CN501
DD-95 BOARD (SEE PAGE 4-105)
CN502
DC PACK SW
BATT SIG
INTELLIGENT ACCESSORY SHOE MODEL
PS504
LIGHT UNREG
PS503
MT UNREG
PS502
VTR UNREG1
PS501
VTR UNTEG2
VTR UNREG
EVF UNREG
LIGHT UNREG
Q519-521
XLIGHT ON
CN106
L503
L501
L502
IC501 (1/2)
DC/DC CONVERTER
Q503 SWITCHING
OUTPUT-1
FB1
L506
D503
MT 5V
VCC
Q504 SWITCHING
L507
D504
OUTPUT-4
CT
RT
MOSGATE-4
FB4
Q505 SWITCHING
L509
L508
A 3.2V
D 3.2V
AUDIO 3.2V
OUTPUT VCC 13
OUTPUT VCC 24
T501
Q506 SWITCHING
COMP
D505
Q509-512
-7.5V REG
CAM -7.5V
OUTPUT-3
L511
CAM 15V
Q508
EMERGENCY DETECT
FB3
Q507 SWITCHING
L512
D506
OUTPUT-2
FB2
L515
L513
L514
AUDIO 4.9V
RP 4.9V
A 4.9V
SW EVF 4.9V
SW EVF 15V
B/W EVF MODEL
COLOR EVF MODEL
Q515
Q517, 518
Q513
EMERGENCY DETECT
STBY3
STBY
VREF
VTR DD ON
EVF DD ON
Q1514
DRUM/CAPSTAN PWM DRIVE
OUTPUT VCC 56
Q501, 502
DRUM VS CAP VS SWITCHING
L516
LCD 4.9V
IC251, 253
IRIS DRIVE HALL AMP
L252
IC252, 255
ZOOM/FOCUS DRIVE
IC104
CHARACTER GENERATOR
IC800
RGB DECODER D/A CONVERTER
COLOR EVF MODEL
IC116
EEPROM
IC202
TIMING GENERATOR
IC115
CAMERA Y·C PROCESS
IC114
ZOOM TBC CNR PROCESS
IC105
Y PROCESS
IC102
MOD/DEMOD EMPH/DEEMPH D/A CONV.
IC117
MECHA/CAMERA/SERVO CONTROL
IC109
AFM PROCESS
IC203
S/H, AGC, A/D CONVERTER
IC106
C PROCESS
IC103
A/D CONVERTER
IC120
ATF SERVO
IC108
D/A CONVERTER (EVR)
IC129
VIDEO I/O AMP
A 4.9V
D 3.2V
DC PACK SW
BATT SIG
LIGHT ON
VTR DD ON
EVF DD ON
VTR UNREG
CAM DD ON
EVER 3.15V
IC122
LOADING MOTOR DRIVE, SENSOR AMP
MT 5V
VTR UNREG
IC121
DRUM MOTOR DRIVE
IC101
REC/PB AMP
L1002
R1894
CN102
CN103
CN101
CN1350
SENSOR VCC
VCC2
VCC1
T REEL, S REEL, SENSOR
H001
H002
CAPSTAN MOTOR
M902
B-MECHA
(SEE PAGE 4-47)
VIDEO HEAD
EVER 4.9V
CN102
Q101, 102
CURRENT LIMITER
J101(1/3)
RFU DC OUT
RFU DC OUT
PJ-80 BOARD (SEE PAGE 4-63)

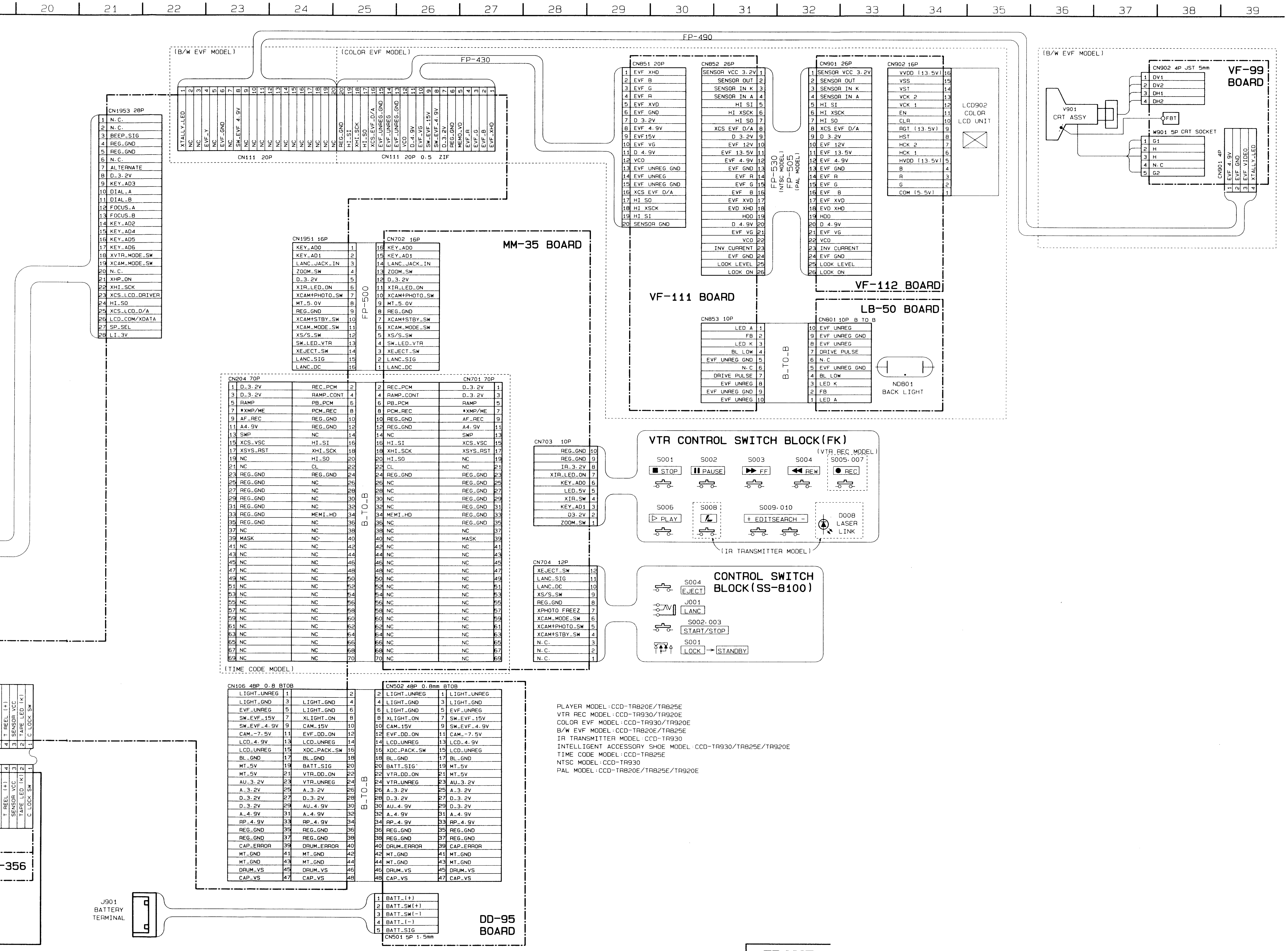

SE-61 BOARD
(SEE PAGE 4-10)
IC451-455
YAW/PITCH SENSOR AMP
CN451
CN202
A 4.9V
D 3.2V
COLOR EVF MODEL
CPC (FOR CHECK)
CN207
EVF UNREG
EVF UNREG(-)
R2070, 2071
IR TRANSMITTER MODEL
MI-29 BOARD
(SEE PAGE 4-79, 82)
IR LED
IC361
IR TRANSMITTER
IC301
IC302
MIC AMP
REMOTE COMMANDER RECEIVER
CN303
CN208
MT 5V
AU 3.2V
A 4.9V
B/W EVF MODEL
VF-99 BOARD
(SEE PAGE 4-91)
IC901
CN901
CRT DRIVE
COLOR EVF MODEL
LB-50 BOARD
(SEE PAGE 4-93)
Q801, T801
INVERTER DC/AC CONVERTER
HIGH
ND801 BACK LIGHT
CN801
CN853
VF-112 BOARD
(SEE PAGE 4-98)
LOOK ON SENSOR
LCD902
HVDD
RGT
VVDD
LCD PANEL
CN902
IC851
DC/AC CONV.
R844
SENSOR IN A
D 4.9V
EVF 13.5V
EVF 12.0V
EVF 4.9V
D 3.2V
SENSOR VCC 3.2V
L853
IC852
13.5V/12V REG
L854
IC901
D/A CONVERTER (EVR)
RGB DECODER
IC902
TIMING GENERATOR
IC904
CN852
CN901
POWER SAVE
IC853-854
VF-111 BOARD
(SEE PAGE 4-93)
CN851
EVF UNREG
D 4.9V
SW EVF 15V
SW EVF 4.9V
D 3.2V
CN111
IC116
EEPROM
IC117
MECHA/ CAMERA/ SERVO CONTROL
IC109
AFM PROCESS
IC120
ATF SERVO
IC129
VIDEO I/O AMP
MM-35 BOARD (SEE PAGE 4-70)
IC701
VSC
PCM AMP
Q701-705
TIME CODE MODEL
CN701
CN703
Q706, 707
D 3.2V
LED 5V
D 3.2V
A 4.9V
CN204
MT 5V
D 3.2V
SW LED VTR
LANC DC
CN1951(1/2)
CN702
CN704
XCAM+STBY SW
XCAM MODE SW
VTR CONTROL SWITCH BLOCK(FK)
(SEE PAGE 4-68)
VTR FUNCTION SW ZOOM SW
VTR LED
CONTROL SWITCH BLOCK (SS-8100)
(SEE PAGE 4-68)
LANC
STANDBY
OFF
CAMERA
CN1951(2/2)
CONTROL SWITCH BLOCK(CF-DS-TR)
(SEE PAGE 4-87)
CN1953
LI 3V
D1958
CN001
BH001 LITHIUM BATTERY
FUNCTION SW
FOCUS DIAL
S001 POWER
VTR ← OFF → CAMERA VTR REC MODEL
PLAYER ← OFF → CAMERA EXCEPT VTR REC MODEL
XVTR MODE SW
XCAM MODE SW
CN002
A 4.9V
D 3.2V
DC PACK SW
BATT SIG
LIGHT ON
VTR DD ON
EVF DD ON
VTR UNREG
CAM DD ON
EVER 3.15V
IC1951
INTIAL RESET, BACKUP VCC
Q1951-1955
V BAT
VRO
V IN
V OUT
IC1955
LANC I/O
UNREG
VCC
LANC DC
LANC DC
CN1350
IC1952
MODE CONTROL
XDC PACK SW
BATT SIG
LIGHT ON
XSHOE ON
VTR DD ON
EVF DD ON
CAM DD ON
SW LED VTR
BACKUP VCC
XVTR MODE SW
XCAM STBY SW
LCD INDICATOR DRIVE
IC151
LC-56 BOARD (SEE PAGE 4-85)

COLOR EVF MODEL:CCD-TR930/TR920E
B/W EVF MODEL:CCD-TR820E/TR825E
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR930/TR825E/TR920E
IR TRANSMITTER MODEL:CCD-TR930
VTR REC MODEL:CCD-TR930/TR920E
TIME CODE MODEL:CCD-TR825E

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM


FP-426
CN401 16P 0.5 NONZIF
CAM -7.5V
VSHT
CAM 15V
GND
CCD OUT
GND
GND
V1
V2
V3
V4
GND
RG
H1
H2
GND
CD-166
BOARD
LENS
TEMP OUT
TEMP COM
ZM RST
GND
FC RST
SENSE VCC
ZM
FC_A
FC_B
FC_B
FC_A
ZM_A
ZM_B
ZM_B
ZM_A
DRIVE(+)
DRIVE(-)
CONT(+)
CONT(-)
HALL(-)
BIAS(-)
HALL(+)
BIAS(+)
CN113 23P 0.5 ZIF
CN112 16P 0.5 ZIF
CN451 12P 0.5 NONZIF
PITCH_AD
YAW_AD
XRST_POR
C_RESET
XCS_VST_AD
VC_SI2
VC_SO2
XVC_SCK2
D_3.2V
A_4.9V
REG_GND
CL
SE-61
BOARD
FP-377
CL
REG_GND
A_4.9V
D_3.2V
XVC_SCK2
VC_SO2
VC_SI2
XCS_VST_AD
C RESET
XRST POR
MT_GND
YAW_AD
PITCH_AD
VC-190 BOARD
(INTELLIGENT ACCESSORY SHOE MODEL)
INTELLIGENT
ACCESSORY
SHOE
SHOE_UNREG
LANC_SIG
SHOE_ID
SHOE_ID2
MIC_R
SHOE MIC_GND
SHOE MIC_L
SHOE_GND
FP-380
(TIME CODE MODEL)
FP-524
(VTR REC MODEL)
CN202 13P 0.5 NONZIF
SHOE_UNREG_GND
SHOE_MIC_L
SHOE_MIC_GND
SHOE_ID
LANC_SIG
SHOE_UNREG
CN205 10P 0.5 NON ZIF
J101
S VIDEO
VIDEO
RFU DC OUT
AUDIO
R
L
CN102 18P
HEADPHONE_L
HEADPHONE_R
XHP_SENS
HP_GND
AUDIO_R_I/O
XJACK_MONO
AUDIO_GND
AUDIO_L_I/O
REG_GND
EVR_4.9V
XV_JACK_IN
VIDEO_I/O_GND
VIDEO_I/O
S_C_GND
C_I/O
S_Y_GND
Y_I/O
XS_JACK_IN
FP-516
XS_JACK_IN
Y_I/O
S_Y_GND
C_I/O
S_C_GND
VIDEO_I/O
VIDEO_I/O_GND
V_JACK_IN
EVR_4.9V
REG_GND
AUDIO_L_I/O
AUDIO_GND
XJACK_MONO
AUDIO_R_I/O
HP_GND
XHP_SENS
HEADPHONE_R
HEADPHONE_L
CN1350 18P
J903
FP-527
CN1965 6P
HP_GND
HP_GND
XHP_SENS
HEADPHONE_R
HEADPHONE_L
N.C.
PJ-80
BOARD
MIC(PLUG IN POWER)
J301
(REC/BATTERY)
IC302
D304
(LASER LINK)
D362, 363
(IR TRANSMITTER MODEL)
CN303 26P
REG_GND
XSIRCS_SIG
F_TALLY
FSC
REG_GND
IR_VI
IR_ON
MT_5V
IR AUDIO_DEV
IR VIDEO_CAR
IR VIDEO_DEV
IR_BIAS
IR_PP
IR_AU_R
IR_AU_L
A_4.9V
REG_GND
XWIND_ON
ZOOM_MIC_CONT
XMIC_MONO
EXT_MIC_DET
MIC_R
REG_GND
MIC_L
SHOE_MIC_L
AU_3.2V
FP-512
CN208 26P
CN301 2P 1.5 I
INT_MIC_L
GND
CN302 2P 1.5 I
INT_MIC_R
GND
MI-29 BOARD
MIC
MIC
MIC901
(L CH)
MIC902
(R CH)
CPC
AFC_FO
RF_AGC_OUT
BPF_MONO
VCO
EVF_VG
EVF_UNREG
EVF_UNREG(-)
EZ_I/O
REC_AFM
RF_AGC_IN
PB_RF
REG_GND
CAP_FG
SP_SWP
REC_RF
PB_PCM_RF
CN207 16P
FOR CHECK
LCD903
01:23:45
CN152 20P 0.5 NONZIF
COM0
COM1
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
SEG8
SEG9
SEG10
SEG11
SEG12
SEG13
SEG0
SEG15
SEG14
COM3
COM2
BZ151
BEEP
LC-56 BOARD
CN151 8P
REG_GND
REG_GND
XCS_LCD_DRIVER
LCD_COM/XDATA
HI_SO
XHI_SCK
HI_3.2V
BEEP_SIG
BH001
LITHIUM
BATTERY
HOLDER
CONTROL SWITCH BLOCK
(CF DS-TR)
S002-S012, 015
EXPOSURE, DATE, TIME,
PICUTURE EFFECT, PROGRAM AE,
BACKLIGHT, MENU, COUNTER RESET,
CONTROL, FADER, TITLE, 16:9 WIDE
S013
START/STOP MODE
5 SEC
S001
POWER
CAMERA
OFF
VTR PLAYER
PLAYER MODEL
VTR REC MODEL
RV001
FOCUS
NEAR
FAR
S014
AUTO
MANUAL
INFINITY
S016
STEADY SHOT
OFF
ON
CN1953 28P
N.C.
N.C.
BEEP_SIG
REG_GND
REG_GND
N.C.
ALTERNATE
D_3.2V
KEY_AD3
DIAL_A
DIAL_B
FOCUS_A
FOCUS_B
KEY_AD2
KEY_AD4
KEY_AD5
KEY_AD6
XVTR_MODE_SW
XCAM_MODE_SW
N.C.
XHP_ON
XHI_SCK
XCS_LCD_DRIVER
HI_SO
XCS_LCD_D/A
LCD_COM/XDATA
SP_SEL
LI_3V
(B/W EVF MODEL)
XTALLY_LED
NC
NC
EVF_Y
NC
EVF_GND
NC
SW_EVF_4.9V
CN105 8P 0.5 NON ZIF
COM GND
M-SW(A)
M-SW(B)
M-SW(C)
LM(-)
LM(-)
LM(+)
LM(+)
FP-220
M903
LOADING
MOTOR
CN101 16P
LP2Y
LP2X
GND
LP1X
LP1Y
GND
GND
SP1Y
SP1X
GND
SP2X
SP2Y
GND
FEY
FEX
FE
VIDEO
HEAD
SP
LP
1-CH
2-CH
(PAL MODEL)
(NTSC MODEL)
CN104 10P 0.5 NON ZIF
PG
FG-PG COM
FG
COM
W
V
U
FP-248
FG
M
M901
DRUM MOTOR
CN103 12P 0.5 NON ZIF
FG OUT
OFF SET ADJ
STAND BY
FRC
MT_GND
MT_GND
VS
VCC2
VCC1
REG GND
DEW
M902
CAPSTAN MOTOR
CN102 15P 0.5 NON ZIF
GND
TAPE TOP (C)
HI8 MP
S REEL (-)
S REEL (+)
ME/MP
REC PROOF
TAPE END (C)
TAPE LED (A)
HALL COM
T REEL (-)
T REEL (+)
SENSOR VCC
TAPE LED (K)
C LOCK SW
FP-221
FP-249
FP-355
FP-356
B-MECHA
J901
BATTERY
TERMINAL

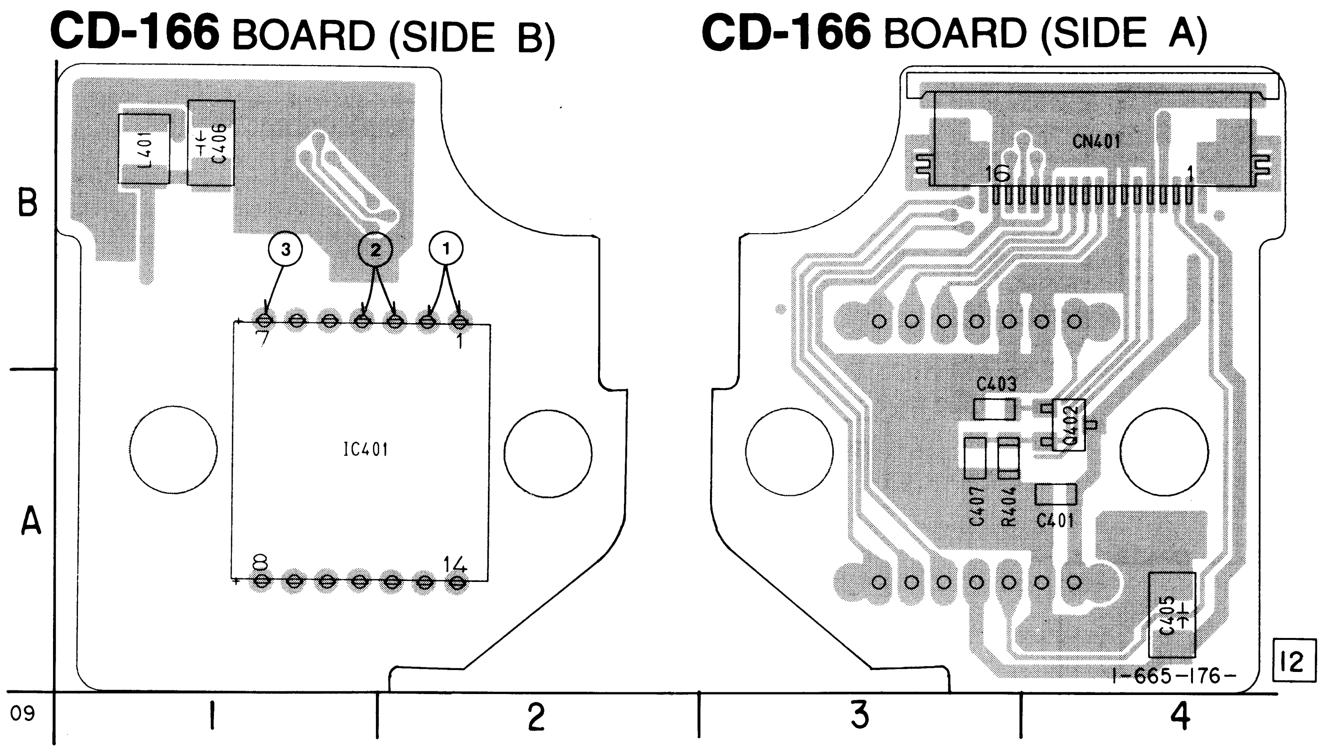

20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39
FP-490
FP-430
(B/W EVF MODEL)
(COLOR EVF MODEL)
CN1953 28P
CN111 20P
CN111 20P 0.5 ZIF
CN851 20P
CN852 26P
FP-530 (NTSC MODEL)
FP-505 (PAL MODEL)
CN901 26P
CN902 16P
LCD902 COLOR LCD UNIT
VF-111 BOARD
VF-112 BOARD
LB-50 BOARD
CN853 10P
CN801 10P B TO B
B_TO_B
ND801 BACK LIGHT
VF-99 BOARD
CN902 4P JST 5mm
V901 CRT ASSY
FBT
W901 5P CRT SOCKET
CN901 4P
MM-35 BOARD
CN1951 16P
CN702 16P
FP-500
CN204 70P
CN701 70P
(TIME CODE MODEL)
CN703 10P
CN704 12P
VTR CONTROL SWITCH BLOCK(FK)
(VTR REC MODEL)
S001 STOP
S002 PAUSE
S003 FF
S004 REW
S005·007 REC
S006 PLAY
S008
S009·010 + EDITSEARCH −
D008 LASER LINK
(IR TRANSMITTER MODEL)
CONTROL SWITCH BLOCK(SS-8100)
S004 EJECT
J001 LANC
S002·003 START/STOP
S001 LOCK → STANDBY
CN106 48P 0.8 BTOB
CN502 48P 0.8mm BTOB
J901 BATTERY TERMINAL
CN501 5P 1.5mm
DD-95 BOARD
-356

PLAYER MODEL:CCD-TR820E/TR825E
VTR REC MODEL:CCD-TR930/TR920E
COLOR EVF MODEL:CCD-TR930/TR920E
B/W EVF MODEL:CCD-TR820E/TR825E
IR TRANSMITTER MODEL:CCD-TR930
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR930/TR825E/TR920E
TIME CODE MODEL:CCD-TR825E
NTSC MODEL:CCD-TR930
PAL MODEL:CCD-TR820E/TR825E/TR920E

FRAME

CD-166 (CCD IMAGER) PRINTED WIRING BOARD

– Ref No. CD-166 BOARD: 3,000 series –

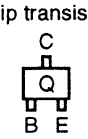

CD-166 BOARD (SIDE B)
CD-166 BOARD (SIDE A)
L401
C406
③
②
①
7
1
IC401
8
14
CN401
16
1
C403
Q402
C407
R404
C401
C405
1-665-176-
12
B
A
09
1
2
3
4

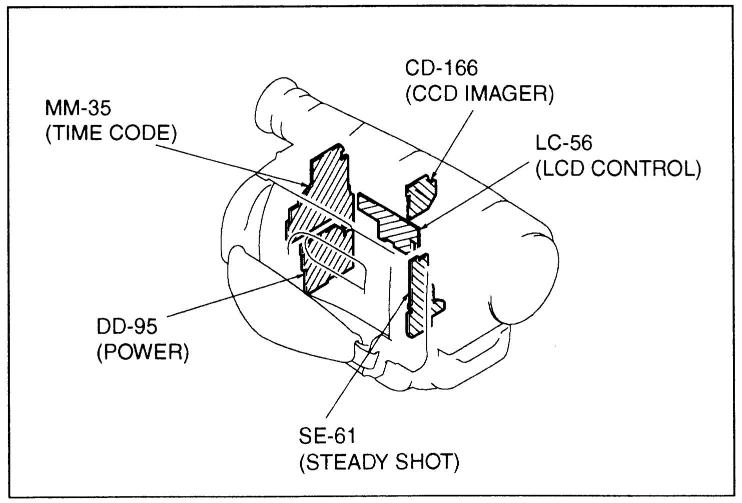
CD-166 BOARD	
C401	A-4
C403	A-3
C405	A-4
C406	B-1
C407	A-3
CN401	B-4
IC401	A-1
L401	B-1
Q402	A-4
R404	A-3

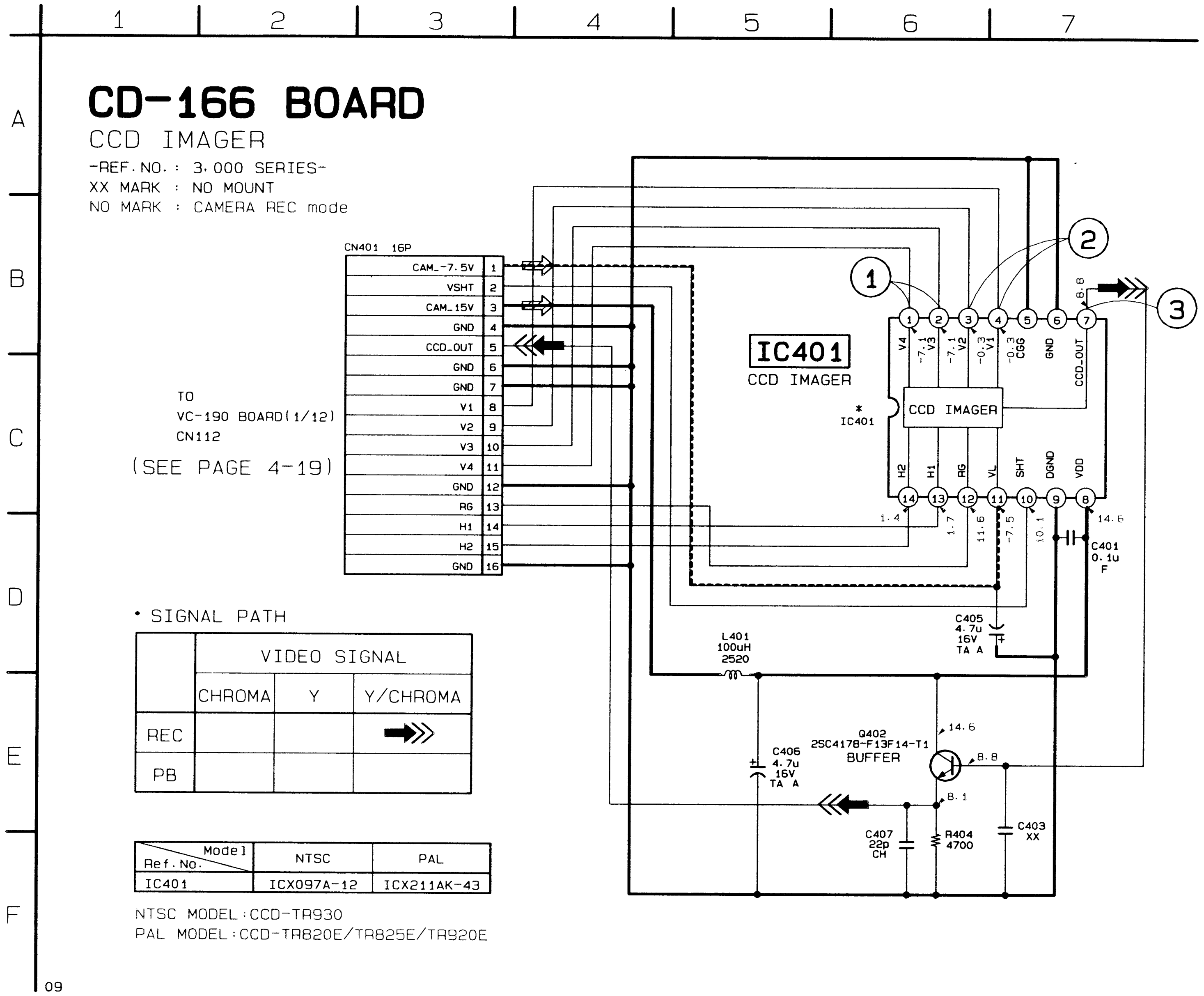
- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor




CD-166
(CCD IMAGER)
MM-35
(TIME CODE)
LC-56
(LCD CONTROL)
DD-95
(POWER)
SE-61
(STEADY SHOT)



CD-166 BOARD

CCD IMAGER

-REF. NO. : 3,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode

1
2
3
4
5
6
7
A
B
C
D
E
F
09
CN401 16P
CAM_-7.5V 1
VSHT 2
CAM_15V 3
GND 4
CCD_OUT 5
GND 6
GND 7
V1 8
V2 9
V3 10
V4 11
GND 12
RG 13
H1 14
H2 15
GND 16
TO
VC-190 BOARD(1/12)
CN112
(SEE PAGE 4-19)
IC401
CCD IMAGER
* IC401
CCD IMAGER
V4
-7.1 V3
-7.1 V2
-0.3 V1
-0.3 CGG
GND
CCD_OUT
H2
H1
RG
VL
SHT
DGND
VDD
1.4
1.7
11.6
-7.5
10.1
14.6
8.8
C401 0.1u F
C405 4.7u 16V TA A
L401 100uH 2520
Q402 2SC4178-F13F14-T1 BUFFER
14.6
8.8
8.1
C406 4.7u 16V TA A
C407 22p CH
R404 4700
C403 XX
①
②
③

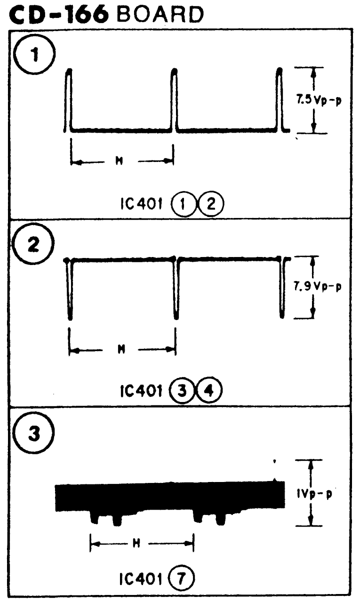
• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡》
PB			

Model / Ref. No.	NTSC	PAL
IC401	ICX097A-12	ICX211AK-43

NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR820E/TR825E/TR920E

CD-166 BOARD



Note on the CCD imager replacement

- The CCD imager is not mounted for the already mounted CD-166 board supplied as the repair parts. When replacing the CD-166 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure. Also, prevent the receiving light section from dust attached and strong light.

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

• For printed wiring boards.

- ▒ : Pattern from the side which enable seeing.
  (The other layer's patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- Through hole is omitted.

• For schematic diagrams.

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/16W unless otherwise noted.
  kΩ : 1000Ω, MΩ : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50 V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▣ : nonflammable resistor.
- ▭ : panel designation.
- △ : internal component.
- The constant such as resistor, capacitors and etc. shown with XX means not used.
- ▭ : adjustment for repeair.
- ▬▬ : B+ Line
- ▪▪▪▪ : B– Line
- ⇨ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

The components identified by mark ⚠or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

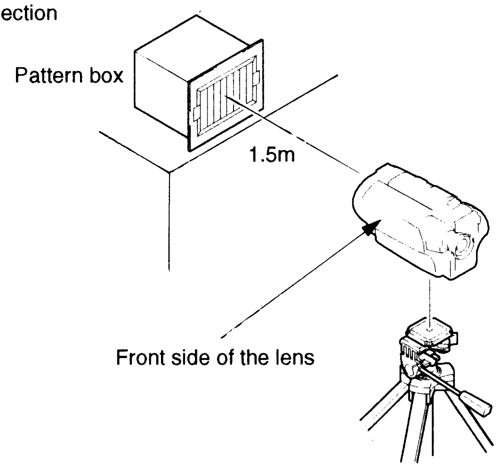
When indicating parts by reference number, please include the board name.

Refer to page 2 as for "Table for difference of functions" of models and classification.

• Measuring conditions voltage value and waveform. (CAMERA block)

- The object is color bar chart of pattern box.
- Voltages and dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltages variations may be noted due to normal production tolerances.

1.Connection



2.Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

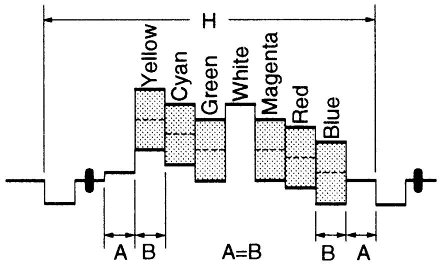


Fig. a (Video output terminal output waveform)

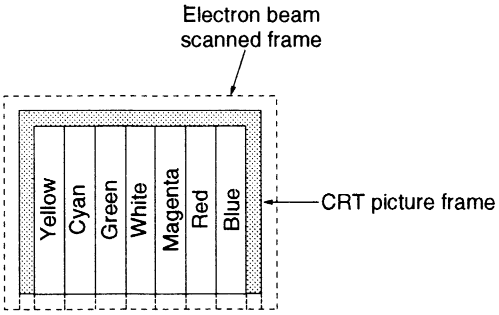


Fig. b (Picture on monitor TV)

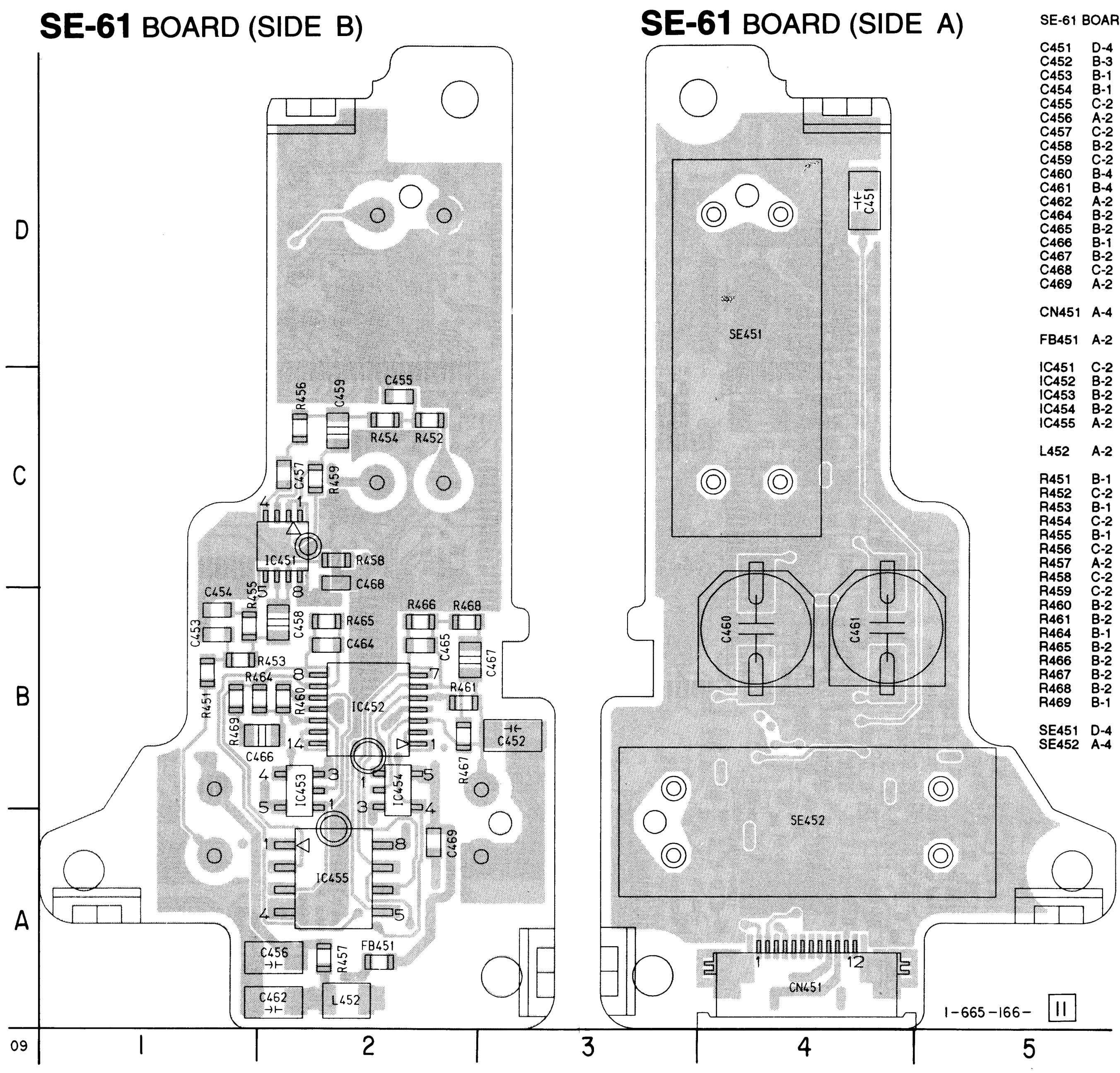
(REC/PB mode)

- Voltages and dc between ground and measurement points
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC 10MΩ).
- Voltages variations may be noted due to normal production tolerances.

Note : Refer "3-1-4. Connecting the equipments" and "3-1-6. How to set the REC Mode" in VIDEO SECTION ADJUSTMENT. (See page 5-41,43)

SE-61 (STEADY SHOT) PRINTED WIRING BOARD

– Ref No. SE-61 BOARD: 1,000 series –

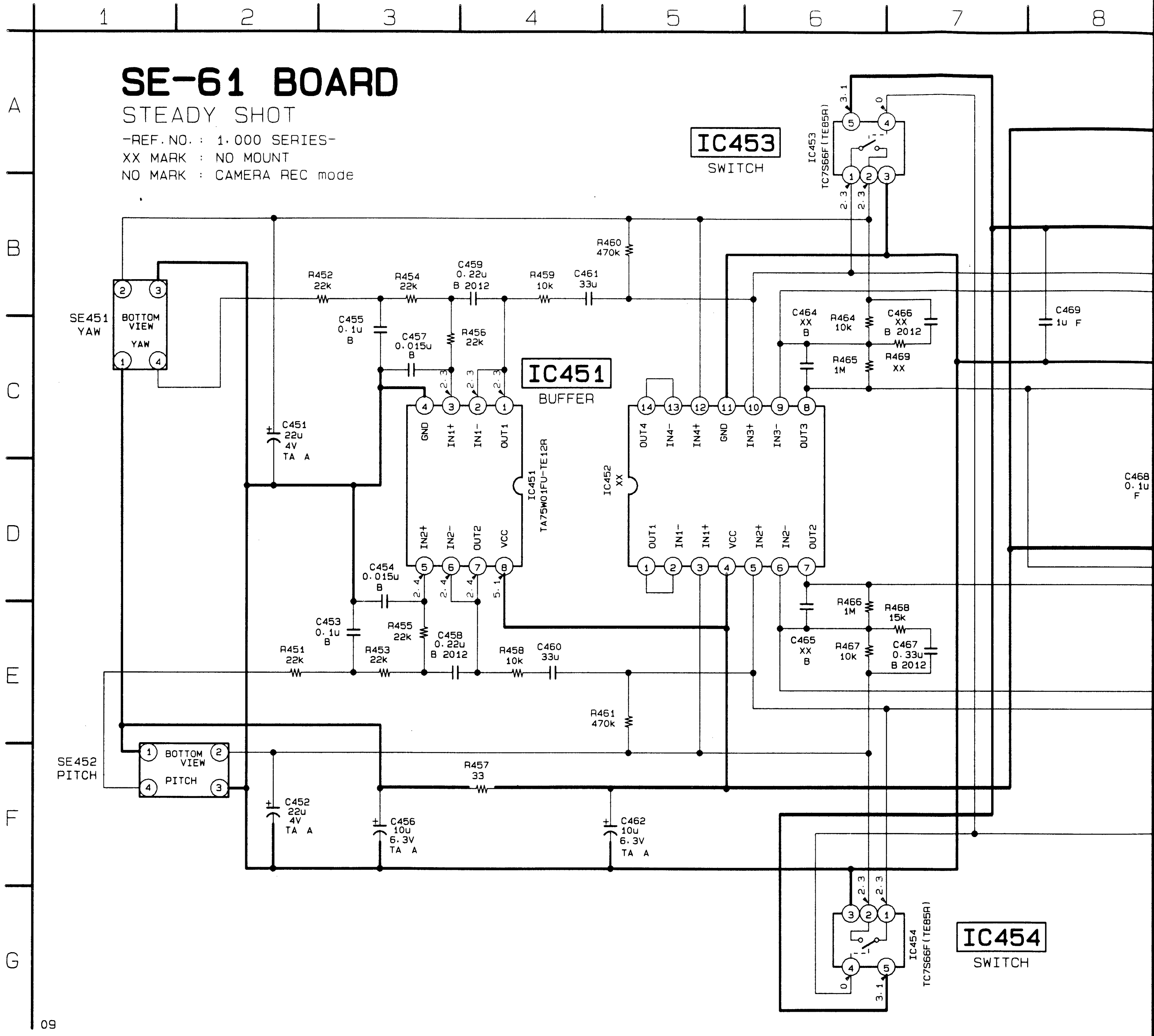


SE-61 BOARD (SIDE B)

SE-61 BOARD (SIDE A)

D
C
B
A
09
1
2
3
4
5
SE451
SE452
C451
C455
C456
C457
C458
C459
C460
C461
C462
C452
C453
C454
C464
C465
C466
C467
C468
C469
R451
R452
R453
R454
R455
R456
R457
R458
R459
R460
R461
R464
R465
R466
R468
R469
IC451
IC452
IC453
IC454
IC455
FB451
L452
CN451
1
12
1-665-166- 11

SE-61 BOARD	
C451	D-4
C452	B-3
C453	B-1
C454	B-1
C455	C-2
C456	A-2
C457	C-2
C458	B-2
C459	C-2
C460	B-4
C461	B-4
C462	A-2
C464	B-2
C465	B-2
C466	B-1
C467	B-2
C468	C-2
C469	A-2
CN451	A-4
FB451	A-2
IC451	C-2
IC452	B-2
IC453	B-2
IC454	B-2
IC455	A-2
L452	A-2
R451	B-1
R452	C-2
R453	B-1
R454	C-2
R455	B-1
R456	C-2
R457	A-2
R458	C-2
R459	C-2
R460	B-2
R461	B-2
R464	B-1
R465	B-2
R466	B-2
R467	B-2
R468	B-2
R469	B-1
SE451	D-4
SE452	A-4

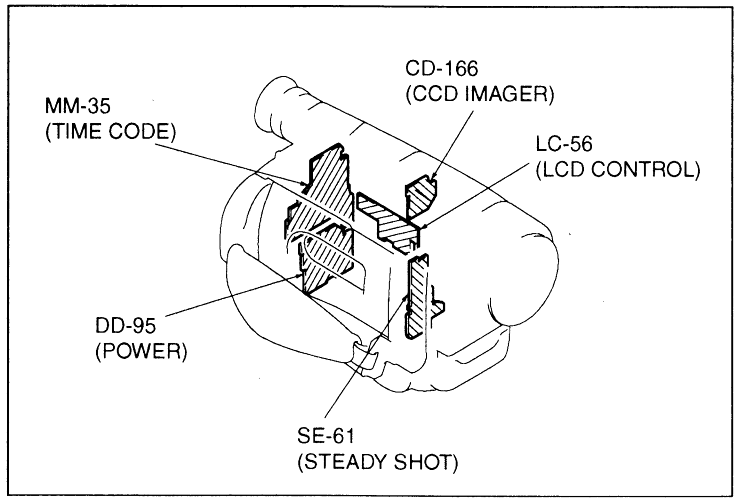


SE-61 BOARD

STEADY SHOT

-REF.NO.: 1.000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode

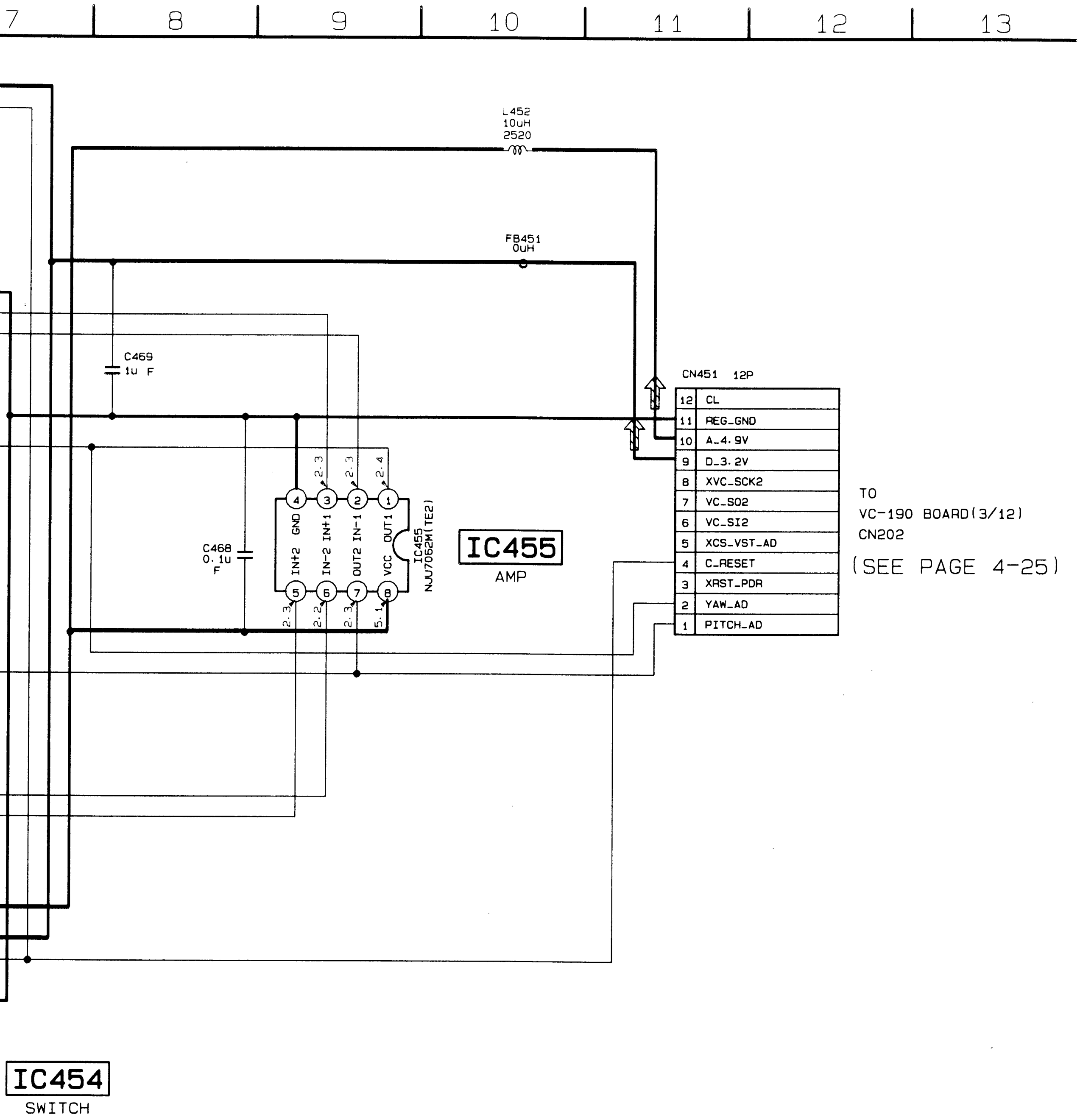
1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
09
IC453
SWITCH
IC453 TC7S66F(TE85R)
IC451
BUFFER
IC451 TA75W01FU-TE12R
IC452 XX
IC454
SWITCH
IC454 TC7S66F(TE85R)
SE451 YAW
BOTTOM VIEW
YAW
SE452 PITCH
BOTTOM VIEW
PITCH
R451 22k
R452 22k
R453 22k
R454 22k
R455 22k
R456 22k
R457 33
R458 10k
R459 10k
R460 470k
R461 470k
R464 10k
R465 1M
R466 1M
R467 10k
R468 15k
R469 XX
C451 22u 4V TA A
C452 22u 4V TA A
C453 0.1u B
C454 0.015u B
C455 0.1u B
C456 10u 6.3V TA A
C457 0.015u B
C458 0.22u B 2012
C459 0.22u B 2012
C460 33u
C461 33u
C462 10u 6.3V TA A
C464 XX B
C465 XX B
C466 XX B 2012
C467 0.33u B 2012
C468 0.1u F
C469 1u F
GND
IN1+
IN1-
OUT1
IN2+
IN2-
OUT2
VCC
OUT4
IN4-
IN4+
IN3+
IN3-
OUT3



CD-166
(CCD IMAGER)
MM-35
(TIME CODE)
LC-56
(LCD CONTROL)
DD-95
(POWER)
SE-61
(STEADY SHOT)

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.


7
8
9
10
11
12
13
L452
10uH
2520
FB451
0uH
C469
1u F
C468
0.1u
F
4
3
2
1
5
6
7
8
GND
IN+1
IN-1
OUT1
IN+2
IN-2
OUT2
VCC
2.3
2.3
2.4
2.3
2.2
2.3
5.1
IC455
NJU7062M(TE2)
IC455
AMP
CN451 12P
12 CL
11 REG_GND
10 A_4.9V
9 D_3.2V
8 XVC_SCK2
7 VC_SO2
6 VC_SI2
5 XCS_VST_AD
4 C_RESET
3 XRST_PDR
2 YAW_AD
1 PITCH_AD
TO
VC-190 BOARD(3/12)
CN202
(SEE PAGE 4-25)
IC454
SWITCH

VC-190 BOARD

C251	F-12
C252	G-6
C253	G-6
C254	F-6
C255	G-6
C256	G-6
C258	F-7
C259	F-7
C260	F-7
C261	G-6
C262	F-7
C263	G-8
C266	G-7
C267	F-13
C268	G-6
C269	F-11
C271	F-12
C272	G-11
C274	G-6
C276	F-6
C1001	B-5
C1002	B-5
C1005	A-13
C1006	B-4
C1007	A-14
C1008	B-6
C1009	A-14
C1010	B-6
C1011	A-13
C1012	B-4
C1013	B-5
C1014	B-4
C1015	B-5
C1016	C-4
C1017	B-14
C1018	B-13
C1019	B-6
C1020	B-5
C1021	A-5
C1022	A-5
C1023	A-6
C1024	A-6
C1025	B-5
C1026	C-4
C1027	A-14
C1028	A-13
C1029	B-6
C1030	B-14
C1031	B-13
C1033	A-13
C1034	C-13
C1035	C-13
C1036	B-14
C1037	B-13
C1038	B-14
C1039	B-15
C1040	B-14
C1041	B-13
C1042	B-14
C1043	B-13
C1044	B-13
C1045	B-14
C1046	B-13
C1047	B-6
C1048	B-14
C1049	B-6
C1050	C-15
C1051	B-14
C1052	B-14
C1053	B-13
C1054	C-14
C1056	C-14
C1058	C-5
C1059	C-13
C1060	C-14
C1061	B-5
C1062	B-5
C1063	C-13
C1064	B-5
C1065	B-6
C1068	C-13
C1070	C-5
C1071	B-6
C1073	C-6
C1074	C-5
C1076	C-5
C1077	C-6
C1078	C-6
C1080	C-5
C1081	C-6
C1083	C-13
C1084	C-6
C1085	D-6
C1086	C-13
C1087	D-14
C1088	C-5
C1089	D-5
C1090	C-14
C1091	C-5
C1092	C-5
C1093	C-5
C1094	D-14
C1095	D-14
C1096	C-4
C1097	C-14
C1140	C-6
C1141	C-7
C1144	C-13
C1145	C-6
C1147	C-5
C1149	B-6
C1150	D-13
C1151	C-6
C1152	B-4
C1153	C-4
C1154	C-4
C1155	C-4
C1156	C-4
C1157	C-16
C1158	C-2
C1160	B-3
C1161	B-3
C1162	A-3
C1163	A-3
C1164	A-3
C1165	B-2
C1166	A-3
C1167	A-3
C1168	A-4
C1170	D-4
C1171	C-4
C1172	C-3
C1173	C-2
C1174	B-3
C1201	E-4
C1202	E-4
C1203	D-4
C1204	D-4
C1205	E-4
C1206	E-4
C1207	E-4
C1208	D-4
C1209	E-5
C1210	E-2
C1212	E-4
C1213	E-4
C1215	D-4
C1216	D-4
C1217	D-5
C1218	E-5
C1219	E-4
C1220	E-4
C1222	B-1
C1223	D-16
C1224	D-16
C1227	E-14
C1228	E-15
C1229	E-14
C1230	D-14
C1231	D-15
C1232	E-15
C1233	D-15
C1234	E-15
C1236	E-15
C1237	E-15
C1240	D-14
C1250	E-15
C1280	E-5
C1282	D-16
C1283	E-5
C1284	B-1
C1285	E-16
C1290	E-4
C1301	D-14
C1302	D-14
C1305	E-6
C1307	E-6
C1308	F-12
C1309	F-12
C1310	F-13
C1311	F-13
C1312	F-12
C1313	F-13
C1314	F-6
C1315	E-6
C1317	E-13
C1318	F-12
C1319	F-6
C1320	F-12
C1321	E-13
C1322	E-6
C1323	E-6
C1324	E-13
C1325	D-13
C1326	D-13
C1327	D-13
C1328	D-13
C1330	D-7
C1331	D-12
C1332	D-12
C1333	C-12
C1334	D-13
C1335	E-7
C1336	E-7
C1337	E-7
C1338	E-7
C1339	E-12
C1340	E-12
C1342	E-14
C1343	F-7
C1344	E-7
C1348	E-7
C1349	E-7
C1350	C-15
C1351	F-8
C1352	C-15
C1353	B-15
C1370	D-13
C1402	C-8
C1403	C-8
C1404	C-7
C1405	C-11
C1406	C-8
C1407	C-7
C1408	C-7
C1409	C-7
C1410	D-7
C1411	D-7
C1412	C-12
C1414	D-7
C1415	D-12
C1416	E-7
C1417	E-7
C1422	D-12
C1423	E-11
C1424	E-7
C1425	E-7
C1426	E-7
C1427	E-8
C1429	E-8
C1430	E-8
C1431	F-8
C1432	F-8
C1433	E-8
C1434	D-8
C1435	D-9
C1436	D-9
C1437	D-9
C1439	C-9
C1441	D-9
C1444	E-8
C1463	E-7
C1466	D-7
C1468	C-8
C1471	C-8
C1474	D-7
C1475	E-8
C1476	E-8
C1477	E-8
C1478	D-12
C1479	C-7
C1480	C-8
C1481	C-8
C1485	D-11
C1486	D-11
C1487	D-10
C1488	D-11
C1489	D-11
C1490	C-9
C1491	E-8
C1492	D-7
C1493	C-11
C1601	F-5
C1602	F-6
C1604	E-6
C1605	F-5
C1608	G-5
C1610	F-14
C1612	F-5
C1615	F-4
C1616	F-4
C1617	F-14
C1618	F-14
C1619	F-14
C1620	F-14
C1621	F-4
C1622	F-14
C1624	F-14
C1625	G-15
C1626	F-13
C1628	F-5
C1629	F-5
C1630	E-5
C1631	F-5
C1635	E-14
C1637	E-15
C1638	E-15
C1639	E-14
C1640	E-14
C1641	F-14
C1642	E-15
C1643	F-14
C1644	F-14
C1645	F-14
C1646	F-14
C1647	F-15
C1701	F-3
C1702	D-18
C1703	F-16
C1751	F-15
C1752	G-1
C1753	E-2
C1754	E-17
C1755	E-17
C1756	E-17
C1757	E-18
C1758	E-18
C1760	G-2
C1761	F-18
C1762	G-18
C1763	G-2
C1764	G-2
C1765	G-1
C1766	E-1
C1767	F-1
C1768	F-1
C1769	F-1
C1770	F-1
C1771	E-2
C1772	E-2
C1773	F-1
C1774	F-2
C1775	F-2
C1776	F-2
C1777	F-2
C1778	F-2
C1779	G-1
C1780	F-18
C1851	A-15
C1852	A-16
C1853	B-16
C1854	B-4
C1855	B-16
C1856	B-4
C1857	B-4
C1858	B-16
C1859	B-16
C1860	B-4
C1861	B-4
C1862	B-15
C1863	B-15
C1864	B-4
C1865	B-15
C1866	B-15
C1867	B-15
C1868	A-2
C1869	B-1
C1870	A-17
C1871	A-17
C1872	A-2
C1873	A-2
C1874	A-17
C1875	A-2
C1876	A-17
C1877	A-17
C1878	A-17
C1879	A-18
C1880	A-2
C1882	A-18
C1884	A-18
C1886	B-15
C1887	A-1
C1888	A-16
C1951	C-9
C1952	B-8
C1953	B-8
C1954	A-12
C1955	B-9
C1956	B-8
C1957	C-11
C1958	B-11
C1959	C-12
C1960	A-12
C1961	C-11
C1963	A-8
C1964	A-7
C1965	A-12
C1967	A-7
C1968	A-12
C1971	A-7
C1974	A-12
C1976	C-11
C1978	B-10
C1980	B-10
C1981	B-11
C1982	B-11
C1986	B-7
C1987	B-8
C1989	B-8
C1990	A-8
C1991	A-12
C2051	E-1
C2052	D-1
C2054	D-2
C2055	D-2
C2056	D-2
C2057	E-2
CN101	A-14
CN102	A-2
CN103	A-3
CN104	A-15
CN105	A-7
CN106	A-18
CN111	C-17
CN112	F-13
CN113	G-13
CN202	D-9
CN204	C-18
CN205	G-11
CN207	A-10
CN208	B-9
CN1350	C-10
CN1350	D-10
CN1950	B-17
CN1951	E-18
CN1953	A-11
D1001	D-15
D1036	E-7
D1201	E-4
D1202	D-4
D1305	E-7
D1350	B-2
D1351	B-2
D1352	B-2
D1353	E-10
D1601	E-5
D1602	G-4
D1951	C-9
D1952	B-8
D1953	A-8
D1954	A-8
D1955	B-8
D1956	B-12
D1957	B-8
D1958	A-7
D2051	C-2
D2052	C-2
FB251	F-7
FB1151	D-4
FB1601	F-5
FB1602	G-5
FB1603	F-4
FB1604	F-4
FB1605	F-4
FB1701	E-18
FB1702	G-4
IC101	B-14
IC102	C-3
IC103	B-3
IC104	C-1
IC105	E-3
IC106	E-15
IC108	E-6
IC109	D-8
IC110	C-16
IC114	D-17
IC115	F-3
IC116	G-2
IC117	F-17
IC118	E-2
IC119	E-2
IC120	F-1
IC121	B-15
IC122	A-17
IC129	E-12
IC130	D-16
IC202	F-5
IC203	F-15
IC251	F-13
IC252	G-7
IC253	F-12
IC255	F-8
IC800	D-1
IC1951	B-8
IC1952	B-11
IC1995	B-7
L252	F-7
L253	F-7
L1002	A-13
L1003	B-5
L1004	C-4
L1005	B-13
L1006	C-13
L1007	C-5
L1008	C-5
L1009	C-6
L1010	C-6
L1011	C-6
L1012	D-13
L1013	D-6
L1014	D-13
L1015	D-6
L1017	C-14
L1018	D-14
L1019	C-5
L1020	D-15
L1141	D-5
L1151	B-4
L1154	B-2
L1201	E-14
L1202	D-14
L1203	E-5
L1204	E-4
L1206	B-1
L1207	C-17
L1209	E-14
L1220	E-5
L1301	D-14
L1303	E-14
L1305	F-7
L1306	E-7
L1307	E-7
L1308	F-7
L1310	E-14
L1603	G-15
L1604	F-14
L1751	G-15
L1752	G-2
L1753	G-1
L1754	E-1
L1870	B-17
L1951	B-8
L2051	E-1
Q251	G-6
Q252	F-11
Q253	G-12
Q1001	A-4
Q1002	B-5
Q1003	C-4
Q1004	A-5
Q1005	A-5
Q1006	A-6
Q1007	A-6
Q1008	C-4
Q1009	A-6
Q1010	A-5
Q1011	A-5
Q1012	A-6
Q1013	B-5
Q1014	C-5
Q1015	B-5
Q1016	B-5
Q1018	C-15
Q1025	D-5
Q1026	B-6
Q1028	C-13
Q1029	D-6
Q1030	D-13
Q1033	D-14
Q1034	C-6
Q1036	C-6
Q1037	D-5
Q1038	C-13
Q1039	C-14
Q1040	C-14
Q1041	D-14
Q1043	D-15
Q1044	C-5
Q1045	C-14
Q1100	C-13
Q1135	D-14
Q1136	C-5
Q1138	C-5
Q1139	C-6
Q1140	C-14
Q1141	B-6
Q1150	C-13
Q1151	A-3
Q1201	E-5
Q1202	D-5
Q1203	E-4
Q1220	E-5
Q1221	D-17
Q1223	D-4
Q1224	D-4
Q1305	F-7
Q1350	E-7
Q1351	C-15
Q1352	F-11
Q1353	C-15
Q1354	E-11
Q1355	F-11
Q1356	D-15
Q1357	C-15
Q1485	D-11
Q1486	C-10
Q1487	C-11
Q1488	C-11
Q1489	D-12
Q1490	D-12
Q1491	D-11
Q1492	D-11
Q1493	D-11
Q1494	D-11
Q1601	F-14
Q1602	F-13
Q1603	F-14
Q1604	F-13
Q1605	E-14
Q1751	E-1
Q1851	A-1
Q1852	B-1
Q1853	A-2
Q1854	A-1
Q1951	B-10
Q1952	C-9
Q1953	C-9
Q1954	B-9
Q1955	B-10
Q1956	B-8
Q1959	A-8
Q1963	B-9
Q2051	D-2
Q2052	D-2
Q2053	E-2
R251	G-6
R252	G-6
R253	F-13
R254	G-6
R255	G-6
R256	G-6
R257	G-6
R258	G-6
R259	F-6
R260	F-13
R261	F-11
R262	F-11
R263	F-6
R264	F-6
R265	F-13
R266	F-11
R267	G-6
R269	G-12
R270	G-11
R271	F-13
R272	F-6
R273	G-11
R275	G-12
R293	D-9
R294	C-9
R295	D-9
R296	D-10
R297	D-10
R298	D-9
R299	C-9
R300	C-9
R301	C-9
R302	D-10
R303	D-10
R705	G-17
R706	G-17
R1001	A-5
R1002	B-4
R1003	B-4
R1004	B-5
R1005	B-5
R1006	B-4
R1007	B-4
R1009	C-5
R1010	B-5
R1011	A-5
R1012	A-5
R1013	A-6
R1014	C-5
R1015	C-5
R1016	A-5
R1017	A-5
R1018	A-6
R1019	A-6
R1020	B-6
R1022	B-6
R1023	B-14
R1024	B-13
R1025	B-6
R1027	B-6
R1028	B-5
R1030	B-5
R1031	B-5
R1033	B-5
R1034	B-14
R1035	B-13
R1037	B-5
R1039	B-6
R1040	B-15
R1041	B-14
R1042	B-14
R1043	B-14
R1044	B-5
R1045	C-14
R1046	B-14
R1047	B-14
R1048	C-14
R1051	C-14
R1052	B-13
R1053	B-13
R1054	C-14
R1057	C-14
R1058	B-6
R1059	C-6
R1062	B-6
R1076	C-13
R1081	C-5
R1082	C-6
R1083	B-6
R1084	C-4
R1085	D-4
R1086	C-5
R1087	C-6
R1088	C-6
R1089	C-5
R1090	C-6
R1097	C-6
R1098	C-6
R1100	C-6
R1101	C-13
R1102	D-13
R1103	C-13
R1104	D-13
R1105	C-13
R1106	C-6
R1107	D-6
R1110	C-5
R1111	D-6
R1112	D-14
R1114	C-5
R1115	D-14
R1116	D-14
R1117	D-14
R1118	C-6
R1119	C-13
R1120	C-5
R1121	D-5
R1122	C-6
R1123	C-5
R1124	D-5
R1125	C-14
R1128	C-14
R1129	C-5
R1131	D-14
R1134	C-14
R1135	D-14
R1136	C-5
R1137	C-15
R1138	C-15
R1140	C-14
R1142	D-13
R1143	C-14
R1144	C-13
R1145	B-5
R1146	C-13
R1147	D-13
R1148	B-6
R1149	B-6
R1150	B-6
R1151	C-4
R1152	C-4
R1153	C-4
R1154	C-4
R1155	C-4
R1156	C-4
R1157	C-4
R1158	B-3
R1159	B-3
R1160	A-4
R1161	A-4
R1162	A-4
R1163	A-4
R1164	C-2
R1165	D-4
R1180	A-3
R1181	A-3
R1213	E-5
R1214	E-5
R1215	E-5
R1216	E-5
R1217	E-5
R1218	E-5
R1219	D-4
R1221	E-4
R1222	D-4
R1223	D-4
R1225	E-4
R1227	E-4
R1228	D-5
R1230	E-4
R1231	E-4
R1232	D-4
R1233	D-4
R1234	D-4
R1234	D-4
R1236	C-2
R1237	B-2
R1238	C-2
R1239	C-2
R1240	B-2
R1241	B-1
R1242	B-1
R1246	E-15
R1247	E-15
R1248	E-14
R1249	D-15
R1250	E-14
R1251	E-14
R1252	E-14
R1253	D-14
R1254	D-14
R1255	D-14
R1256	E-14
R1280	E-5
R1281	E-5
R1283	D-16
R1284	D-16
R1285	D-16
R1287	E-16
R1289	E-4
R1290	D-5
R1292	D-5
R1293	B-1
R1294	D-4
R1295	D-4
R1296	D-4
R1297	E-14
R1298	E-4
R1299	E-4
R1307	F-6
R1308	E-6
R1312	E-7
R1313	D-7
R1314	D-13
R1315	D-7
R1316	D-13
R1321	E-6
R1322	E-6
R1323	E-6
R1324	E-6
R1330	E-7
R1331	E-6
R1332	E-6
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R1351	C-15
R1352	F-11
R1353	C-15
R1354	B-15
R1356	C-15
R1357	F-11
R1358	C-15
R1359	D-15
R1360	C-15
R1361	C-15
R1362	E-11
R1363	E-11
R1364	C-15
R1365	C-15
R1366	E-11
R1367	E-11
R1368	E-11
R1369	E-11
R1370	E-12
R1372	E-12
R1374	B-2
R1377	B-1
R1380	B-1
R1381	B-2
R1383	B-1
R1390	B-16
R1391	A-10
R1402	C-8
R1403	C-11
R1404	D-7
R1406	D-7
R1407	D-7
R1408	D-7
R1409	D-7
R1410	E-8
R1418	D-11
R1419	E-8
R1421	E-8
R1422	E-8
R1423	E-8
R1424	F-8
R1425	E-8
R1426	E-9
R1460	E-8
R1461	E-8
R1462	C-8
R1463	C-8
R1465	D-7
R1476	D-11
R1485	D-11
R1486	C-11
R1487	C-10
R1488	D-11
R1489	D-11
R1490	D-11
R1491	D-11
R1492	D-11
R1601	F-6
R1603	E-5
R1616	G-5
R1620	F-13
R1621	F-5
R1622	E-5
R1628	F-4
R1629	F-4
R1630	F-4
R1632	F-14
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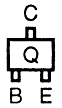
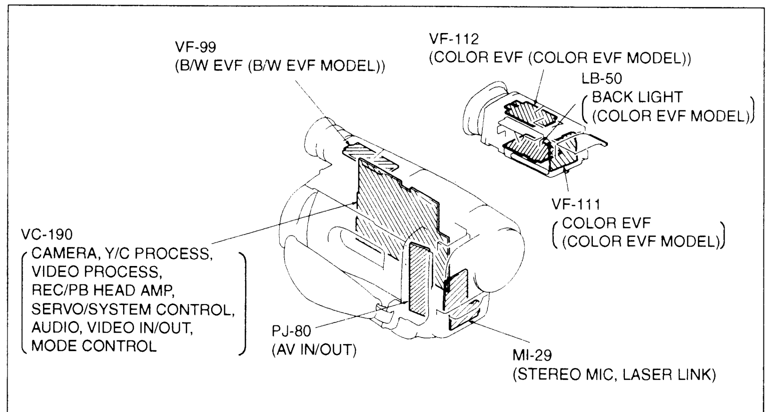
R1637	F-15
R1638	E-14
R1639	E-14
R1642	F-5
R1701	E-18
R1702	D-18
R1703	D-18
R1704	D-18
R1705	D-1
R1706	D-1
R1707	D-1
R1708	D-1
R1709	D-1
R1710	D-1
R1711	C-1
R1712	C-1
R1713	D-1
R1714	D-1
R1715	C-1
R1731	E-18
R1732	E-1
R1751	E-16
R1752	F-16
R1755	F-16
R1756	G-17
R1757	G-17
R1762	F-16
R1772	E-2
R1773	E-2
R1774	G-16
R1775	E-16
R1776	G-16
R1778	E-2
R1779	G-16
R1780	G-16
R1781	E-16
R1782	G-16
R1783	E-17
R1784	E-17
R1785	E-18
R1786	F-2
R1787	F-16
R1789	E-16
R1790	F-18
R1791	F-18
R1792	F-18
R1794	F-18
R1795	F-18
R1796	F-18
R1797	F-1
R1798	E-1
R1799	E-1
R1800	E-1
R1801	F-1
R1802	F-1
R1803	G-1
R1804	F-1
R1805	F-1
R1806	G-1
R1807	G-1
R1808	G-1
R1809	E-1
R1810	F-1
R1811	F-1
R1812	F-2
R1813	F-2
R1814	F-2
R1815	F-1
R1819	G-17
R1820	G-17
R1821	G-16
R1822	G-1
R1823	G-17
R1826	G-17
R1827	G-17
R1836	F-18
R1851	A-15
R1852	A-15
R1853	B-15
R1854	B-15
R1855	A-4
R1856	A-4
R1857	A-4
R1859	B-15
R1860	B-15
R1861	F-16
R1862	F-15
R1863	F-15
R1865	A-2
R1867	A-4
R1868	A-2
R1869	A-2
R1872	A-17
R1873	A-2
R1874	A-17
R1875	A-17
R1876	A-17
R1877	B-1
R1878	A-1
R1879	A-1
R1880	B-2
R1881	A-17
R1882	B-2
R1883	A-17
R1884	B-2
R1887	A-2
R1888	B-1
R1889	A-1
R1890	A-1
R1891	A-1
R1892	A-1
R1893	A-16
R1894	A-1
R1895	A-2
R1896	B-1
R1897	A-4
R1898	A-2
R1953	C-9
R1954	B-10
R1955	B-9
R1956	A-8
R1957	A-8
R1958	A-8
R1961	C-8
R1962	B-8
R1963	A-11
R1964	A-11
R1965	B-7
R1966	C-7
R1967	C-7
R1969	C-7
R1970	C-7
R1971	C-8
R1972	B-7
R1973	B-12
R1977	A-11
R1979	C-8
R1980	C-8
R1982	A-11
R1986	A-11
R1991	B-8
R2001	C-12
R2010	A-11
R2011	C-12
R2012	A-8
R2015	C-11
R2017	B-11
R2020	B-10
R2021	B-10
R2022	B-11
R2023	B-11
R2024	B-11
R2026	B-11
R2029	B-11
R2031	B-10
R2036	A-7
R2037	A-7
R2038	A-7
R2044	B-8
R2046	B-8
R2047	B-7
R2048	B-7
R2049	B-8
R2051	D-2
R2056	D-2
R2058	E-2
R2060	D-2
R2061	D-2
R2062	E-2
R2063	D-2
R2064	D-2
R2065	E-2
R2070	B-18
R2071	B-18
R2074	B-1
R2075	D-2
R2076	C-2
R2151	B-8
R2152	B-8
R2154	C-12
R2162	C-7
TH1751	C-7
X1305	E-13
X1601	F-4
X1751	E-17
X1752	G-18
X1951	C-10
X1952	C-11

- **For Printed Wiring Boards.**
- This board is six-layer print board. However, the patterns of layers 2 to 5 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor

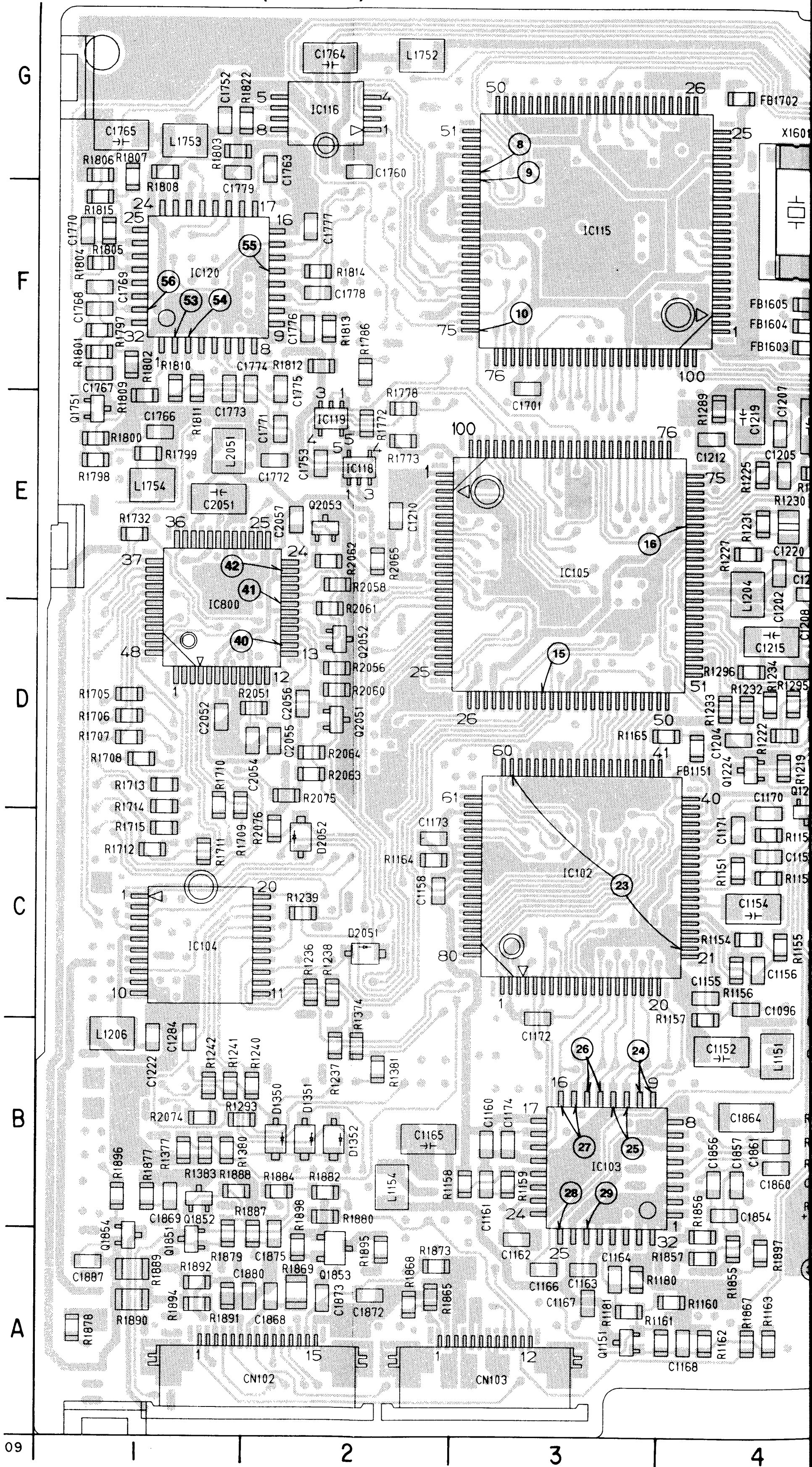




VC-190 (CAMERA, Y/C PROCESS, VIDEO PROCESS, REC/PB HEAD AMP, SE

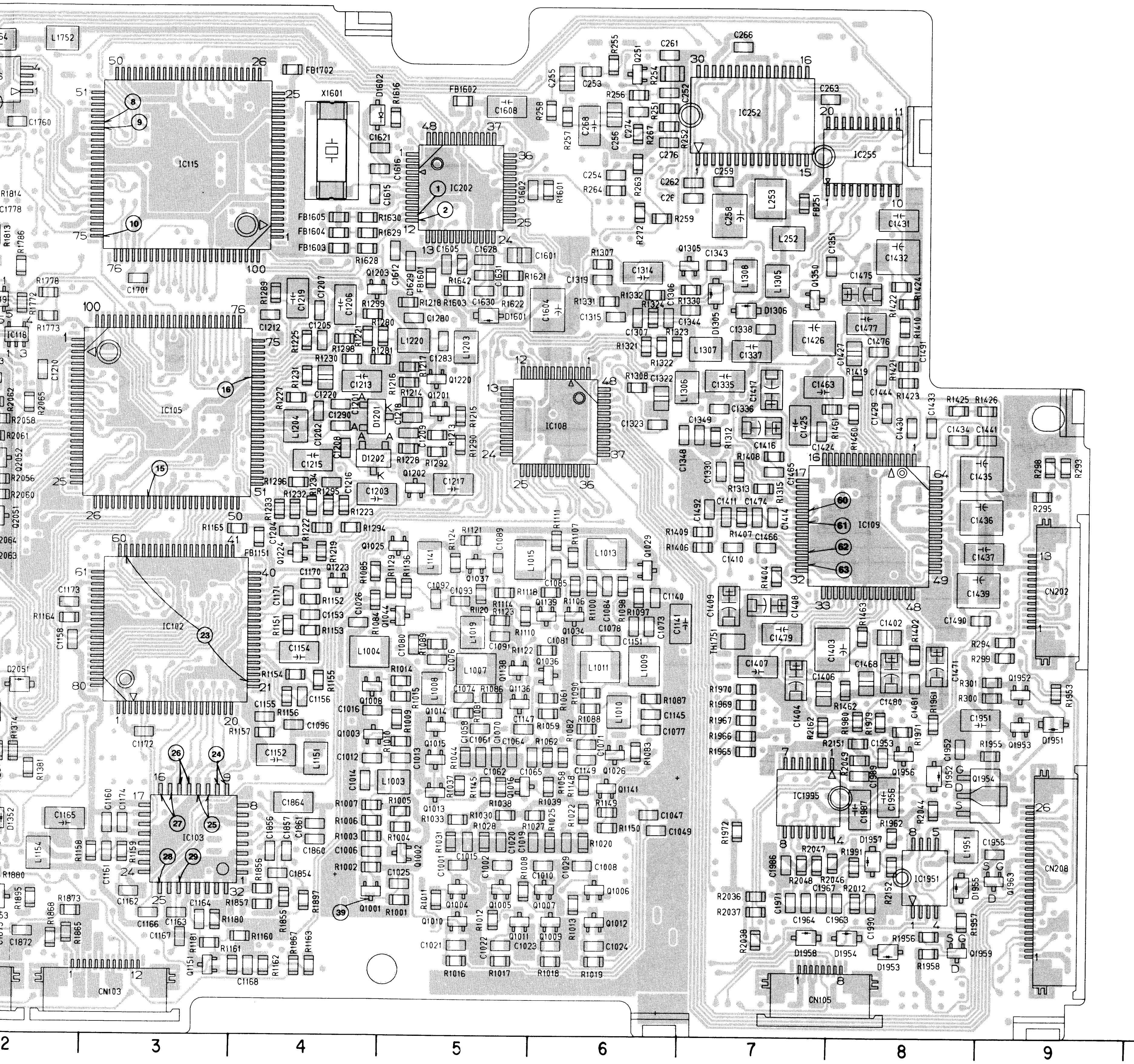
– Ref No. VC-190 BOARD: 10,000 series –

VC-190 BOARD (SIDE B)



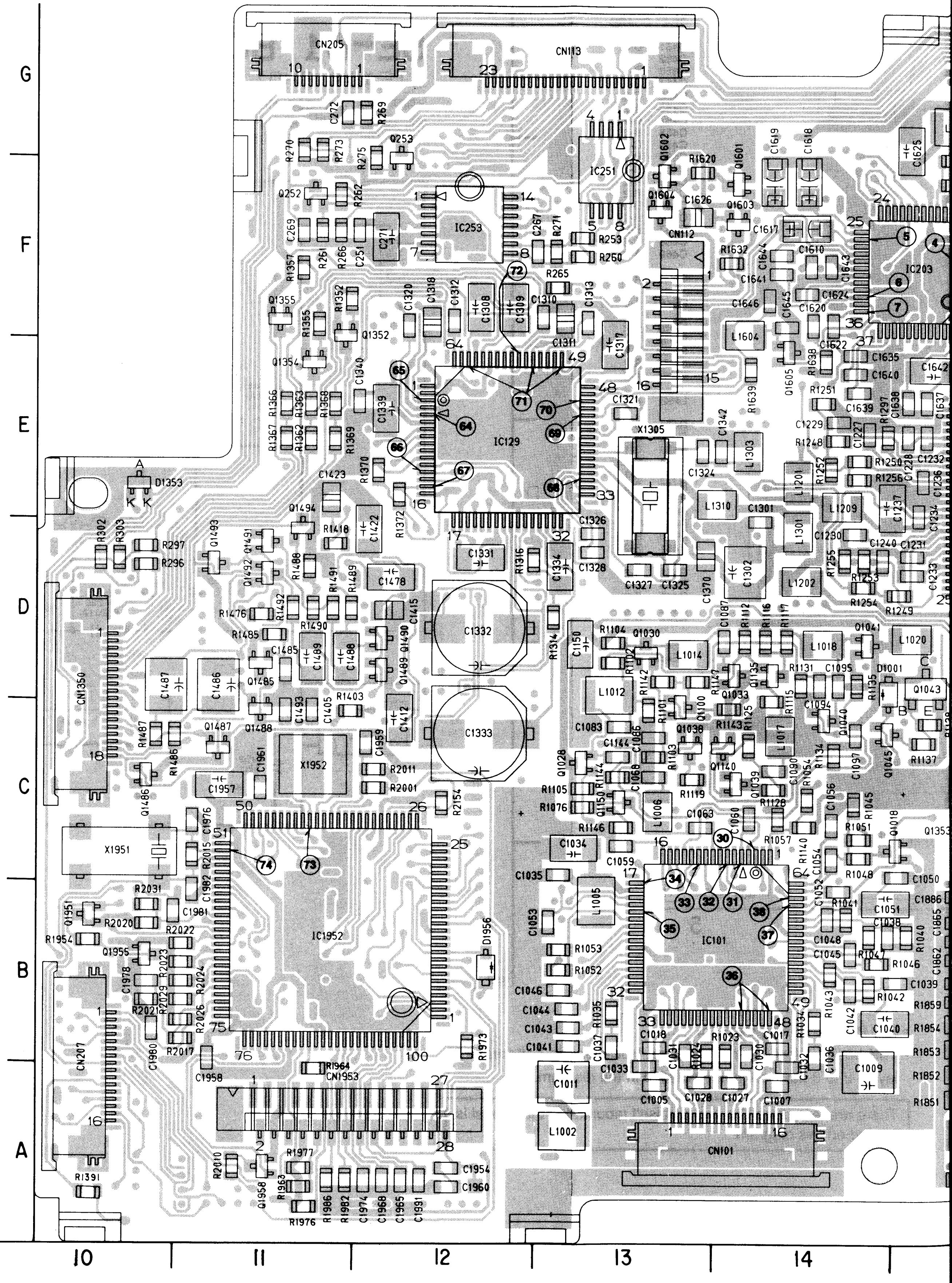
SS, VIDEO PROCESS, REC/PB HEAD AMP, SERVO/SYSTEM CONTROL, AUDIO, VIDEO IN/OUT, MODE CONTROL) PRINTED WIRING BOARD

B)



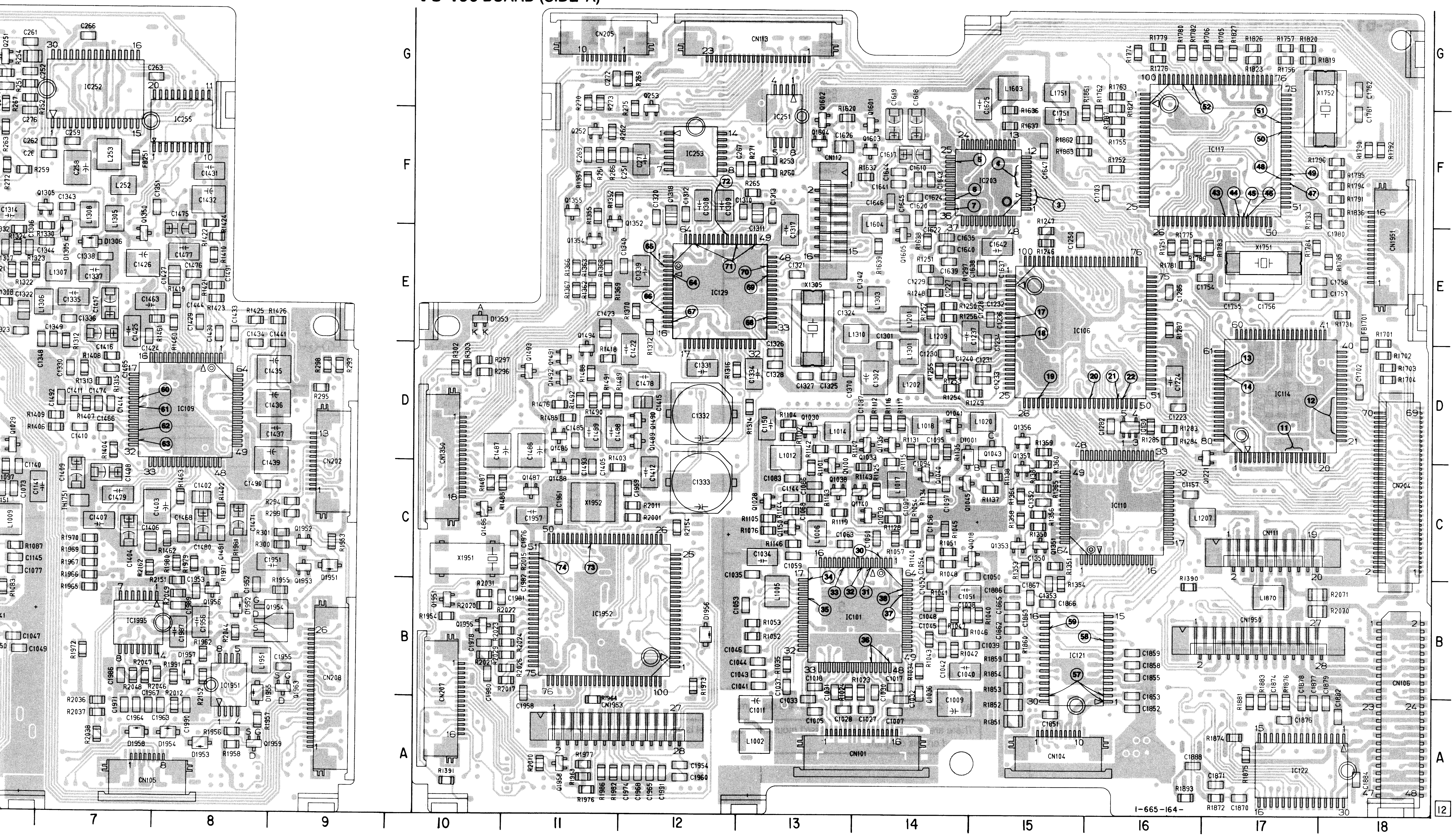
IC115
IC202
IC252
IC255
IC105
IC108
IC109
IC102
IC103
IC1995
IC1951
X1601
CN103
CN105
CN202
CN208
2
3
4
5
6
7
8
9

VC-190 BOARD (SIDE A)



G
F
E
D
C
B
A
CN205
CN113
IC251
IC253
IC129
IC203
IC1952
IC101
CN1350
CN207
CN1953
CN101
X1305
X1951
X1952
10
11
12
13
14

VC-190 BOARD (SIDE A)


IC252
IC255
IC109
IC1995
IC1951
IC253
IC251
IC129
IC203
IC117
IC106
IC114
IC110
IC1952
IC101
IC121
IC122
CN205
CN113
CN112
CN350
CN202
CN208
CN207
CN105
CN1953
CN101
CN104
CN111
CN1950
CN106
CN204
CN1951
X1305
X1751
X1752
X1952
X1951
C1332
C1333
G
F
E
D
C
B
A
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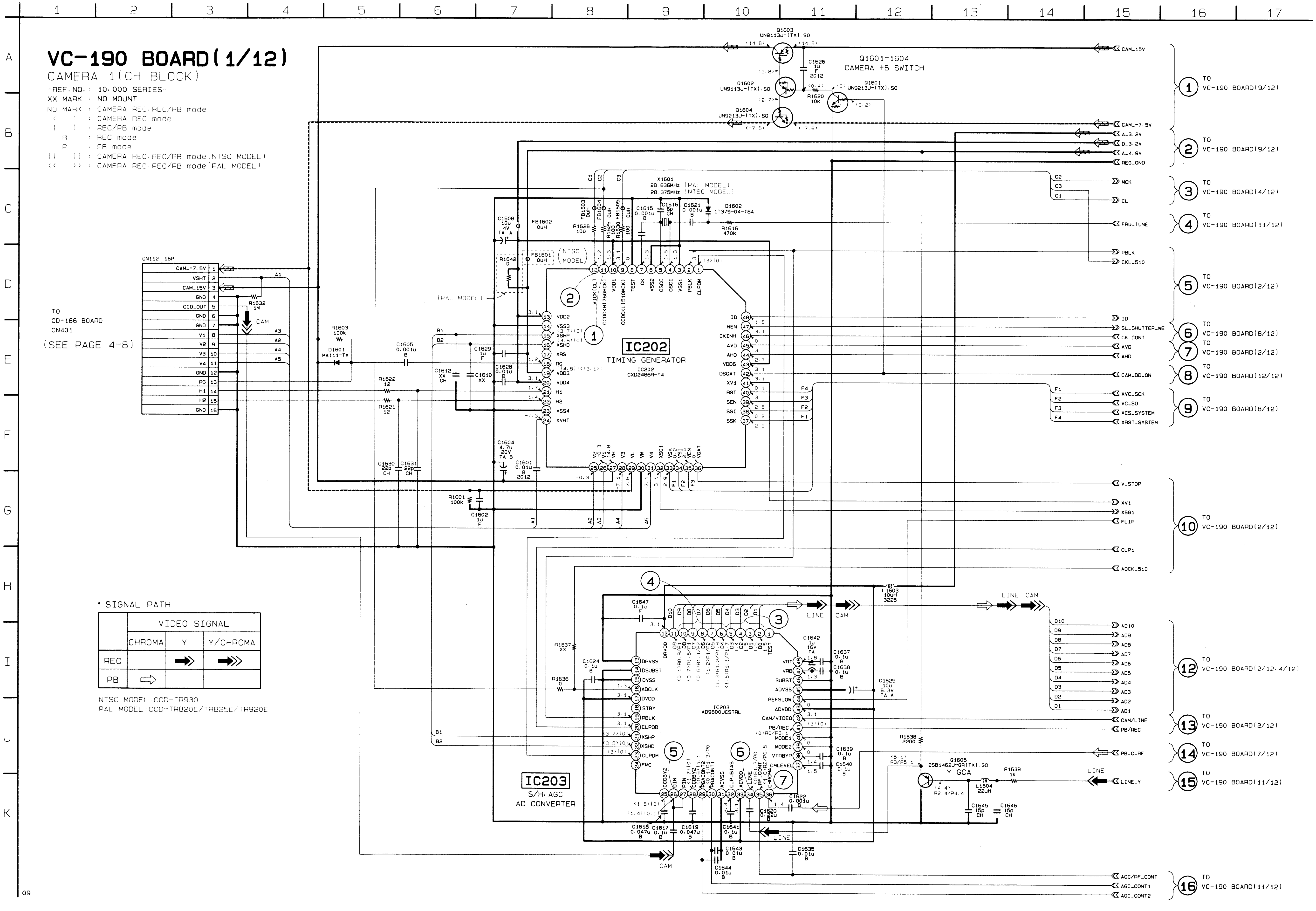
18
1-665-164-
12

VC-190 BOARD(1/12)

CAMERA 1(CH BLOCK)

-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC, REC/PB mode
〈 〉 : CAMERA REC mode
( ) : REC/PB mode
R : REC mode
P : PB mode
(( )) : CAMERA REC, REC/PB mode(NTSC MODEL)
《 》 : CAMERA REC, REC/PB mode(PAL MODEL)



Q1601-1604 CAMERA +B SWITCH
Q1603 UN9113J-(TX).SO
Q1602 UN9113J-(TX).SO
Q1604 UN9213J-(TX).SO
Q1601 UN9213J-(TX).SO
CN112 16P
CAM_-7.5V
VSHT
CAM_15V
GND
CCD_OUT
V1
V2
V3
V4
RG
H1
H2
TO CD-166 BOARD CN401
(SEE PAGE 4-8)
X1601 28.636MHz (PAL MODEL) 28.375MHz (NTSC MODEL)
D1602 1T379-04-T8A
D1601 MA111-TX
IC202 TIMING GENERATOR
IC202 CXD2486R-T4
IC203 S/H, AGC AD CONVERTER
IC203 AD9800JCSTRL
Q1605 2SB1462J-QR(TX).SO Y GCA
LINE CAM
CAM_15V
CAM_-7.5V
A_3.2V
D_3.2V
A_4.9V
REG_GND
MCK
CL
FRQ_TUNE
PBLK
CKL_510
ID
SL_SHUTTER_WE
CK_CONT
AVD
AHD
CAM_DD_ON
XVC_SCK
VC_SO
XCS_SYSTEM
XRST_SYSTEM
V_STOP
XV1
XSG1
FLIP
CLP1
ADCK_510
AD10
AD9
AD8
AD7
AD6
AD5
AD4
AD3
AD2
AD1
CAM/LINE
PB/REC
PB_C_RF
LINE_Y
ACC/RF_CONT
AGC_CONT1
AGC_CONT2
① TO VC-190 BOARD(9/12)
② TO VC-190 BOARD(9/12)
③ TO VC-190 BOARD(4/12)
④ TO VC-190 BOARD(11/12)
⑤ TO VC-190 BOARD(2/12)
⑥ TO VC-190 BOARD(8/12)
⑦ TO VC-190 BOARD(2/12)
⑧ TO VC-190 BOARD(12/12)
⑨ TO VC-190 BOARD(8/12)
⑩ TO VC-190 BOARD(2/12)
⑫ TO VC-190 BOARD(2/12, 4/12)
⑬ TO VC-190 BOARD(2/12)
⑭ TO VC-190 BOARD(7/12)
⑮ TO VC-190 BOARD(11/12)
⑯ TO VC-190 BOARD(11/12)
09

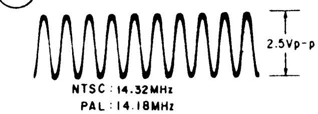
• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡	➡»
PB	⇨		

NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR820E/TR825E/TR920E

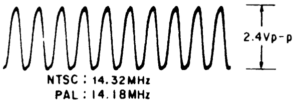
VC-190 BOARD (CH BLOCK)

①



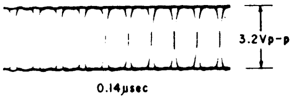
IC202 ⑪ REC/PB

②



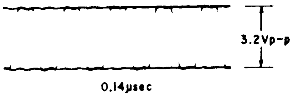
IC202 ⑫ REC/PB

③



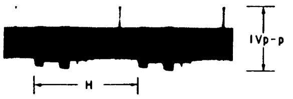
IC203 ②–⑤ CAMERA REC

④



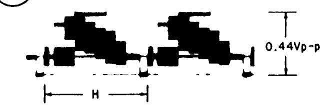
IC203 ⑥ – ⑩ CAMERA REC

⑤



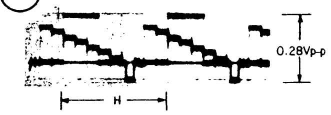
IC203 ㉖ CAMERA REC

⑥



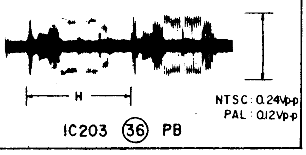
IC203 ㉞ REC (NTSC)

⑥



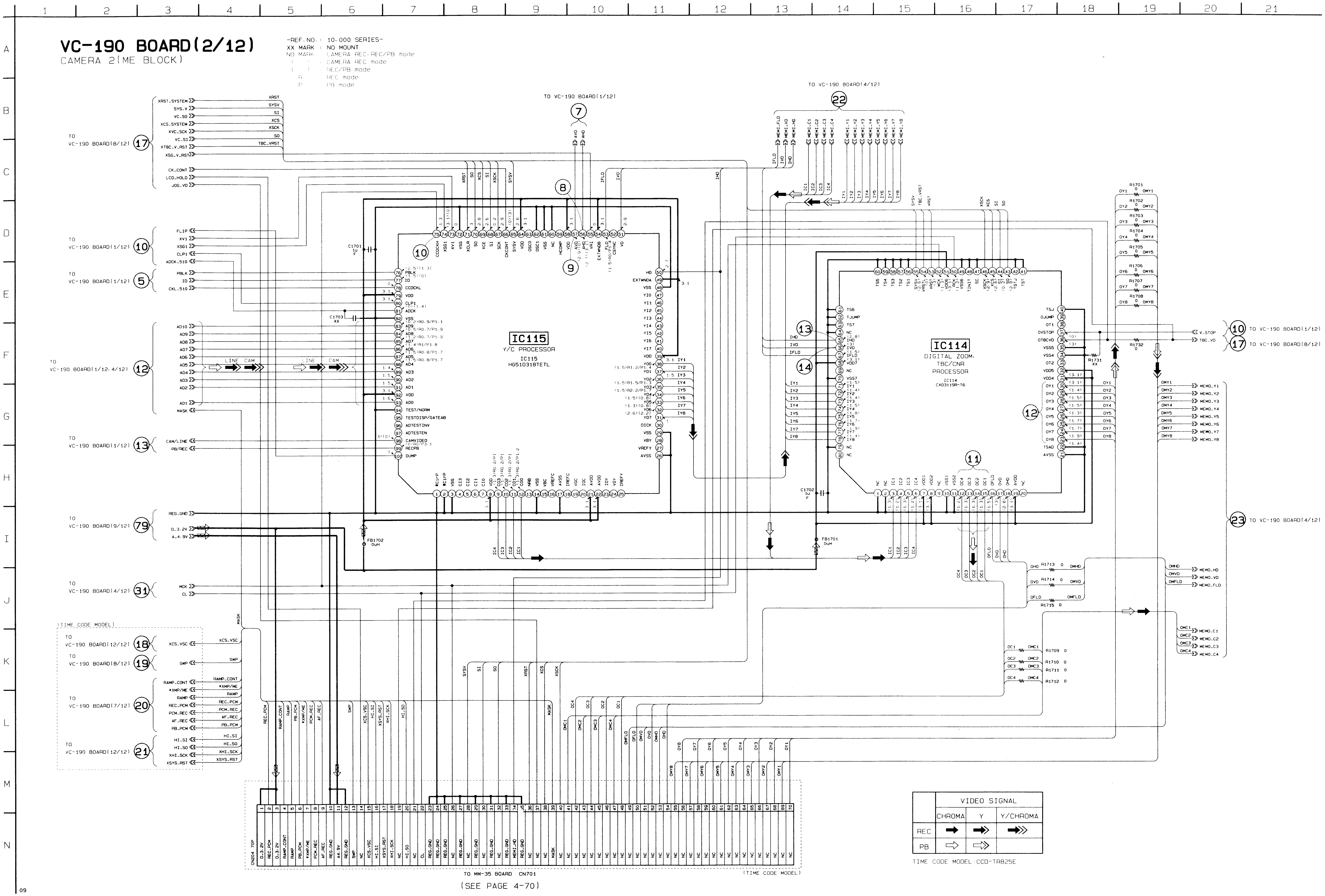
IC203 ㉞ REC (PAL)

⑦



IC203 ㊱ PB

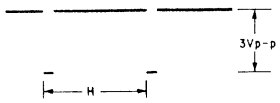
- For schematic diagrams.
- Refer to page 4–15 for Printed Wiring Board.


VC-190 BOARD(2/12)
CAMERA 2(ME BLOCK)
-REF.NO. : 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC, REC/PB mode
< > : CAMERA REC mode
( ) : REC/PB mode
R : REC mode
P : PB mode
TO VC-190 BOARD(8/12) ⑰
TO VC-190 BOARD(1/12) ⑩
TO VC-190 BOARD(1/12) ⑤
TO VC-190 BOARD(1/12, 4/12) ⑫
TO VC-190 BOARD(1/12) ⑬
TO VC-190 BOARD(9/12) (79)
TO VC-190 BOARD(4/12) ㉛
(TIME CODE MODEL)
TO VC-190 BOARD(12/12) ⑱
TO VC-190 BOARD(8/12) ⑲
TO VC-190 BOARD(7/12) ⑳
TO VC-190 BOARD(12/12) ㉑
TO VC-190 BOARD(1/12) ⑦
TO VC-190 BOARD(4/12) ㉒
TO VC-190 BOARD(1/12) ⑩
TO VC-190 BOARD(8/12) ⑰
TO VC-190 BOARD(4/12) ㉓
IC115
Y/C PROCESSOR
IC115 HG51D31BTETL
IC114
DIGITAL ZOOM, TBC/CNR PROCESSOR
IC114 CX03119R-T6
C1701 1u F
C1703 XX
C1702 1u F
FB1702 0uH
FB1701 0uH
R1701–R1708 0
R1709–R1715 0
R1731 XX
R1732 0
CN204 70P
TO MM-35 BOARD CN701
(SEE PAGE 4-70)
(TIME CODE MODEL)
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
LINE
CAM

TIME CODE MODEL: CCD-TR825E

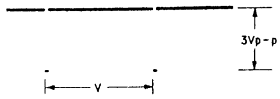
VC-190 BOARD (ME BLOCK)

⑧



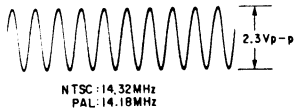
IC115 (56) CAMERA REC

⑨



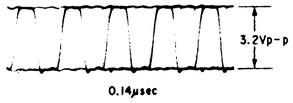
IC115 (57) CAMERA REC

⑩



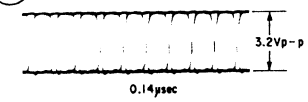
IC115 (75) CAMERA REC

⑪



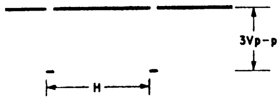
IC114 ⑫-⑮ CAMERA REC

⑫



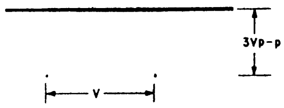
IC114 ㉓ – ㉚ CAMERA REC

⑬



IC114 (65) CAMERA REC

⑭



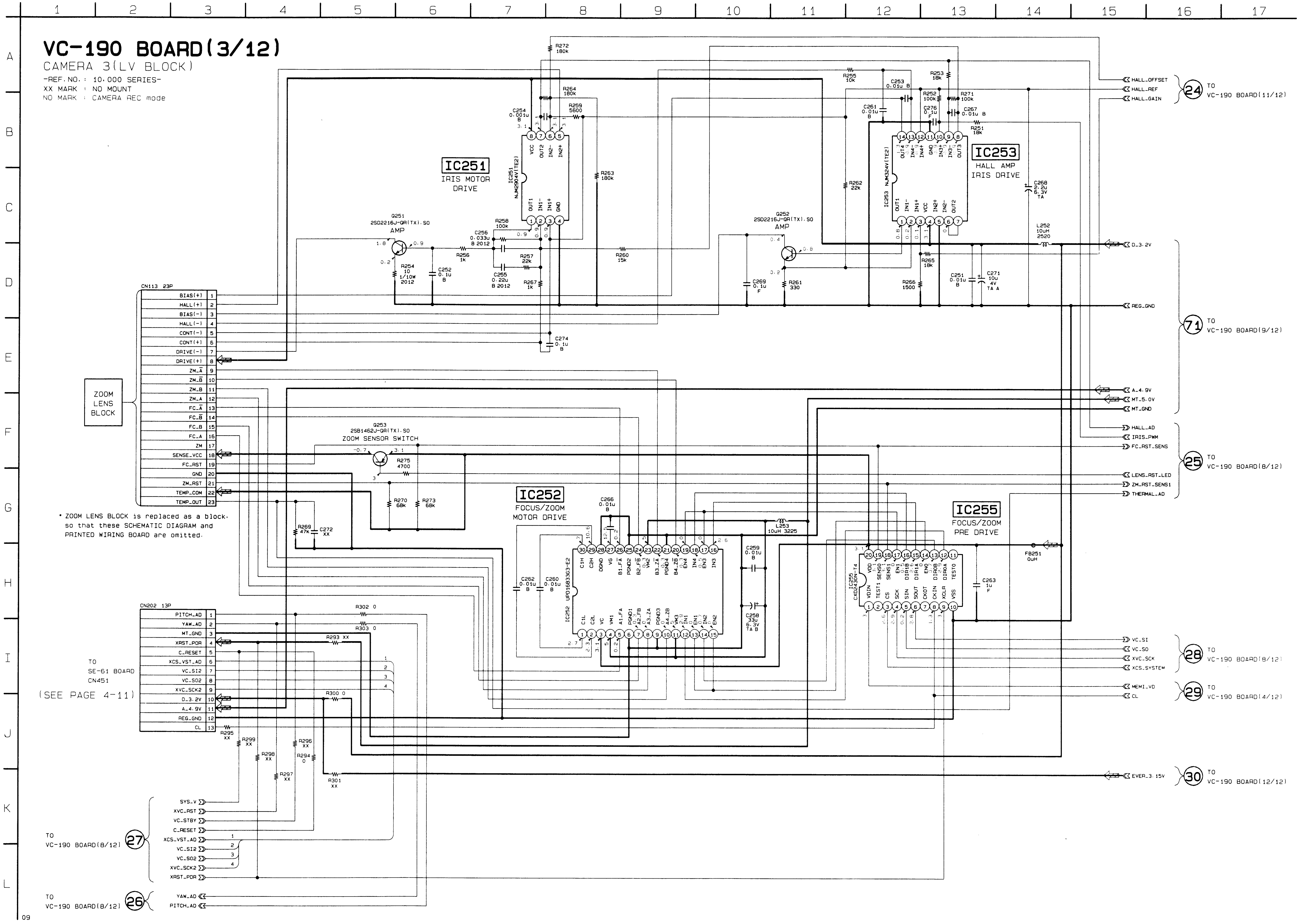
IC114 (66) CAMERA REC

- **For schematic diagrams.**
- Refer to page 4–15 for Printed Wiring Board.

VC-190 BOARD(3/12)

CAMERA 3(LV BLOCK)

-REF. NO. : 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode

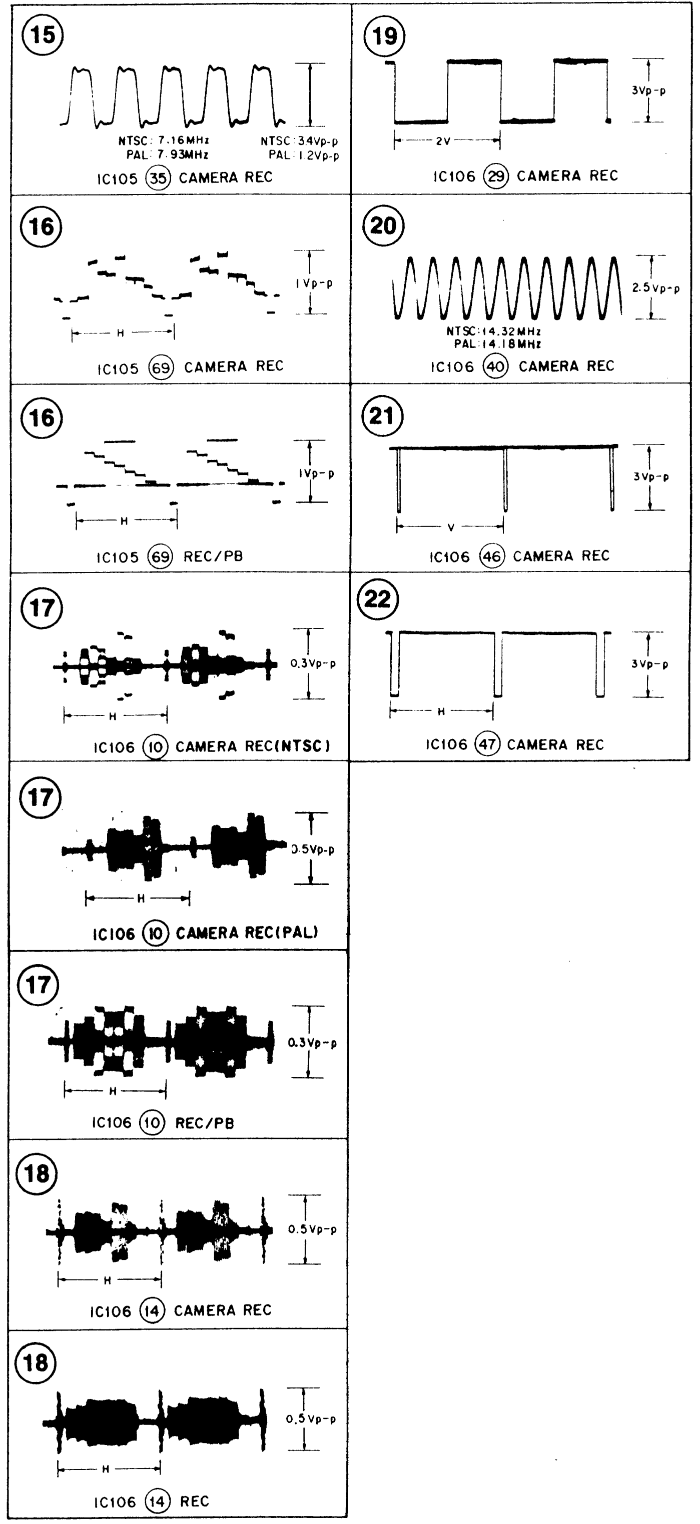


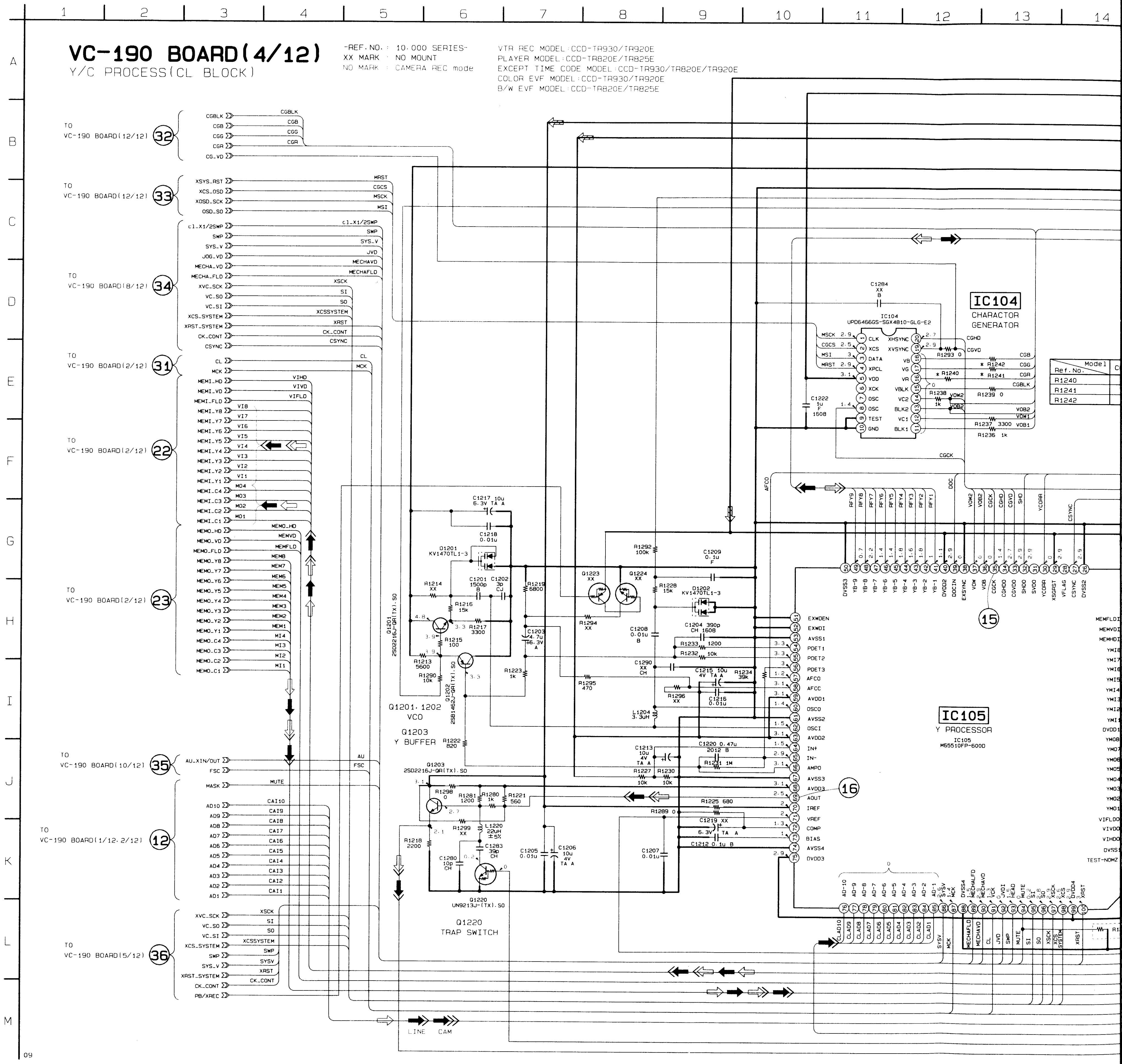
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A B C D E F G H I J K L
IC251
IRIS MOTOR DRIVE
IC251 NJM2904V(TE2)
IC253
HALL AMP IRIS DRIVE
IC253 NJM324V(TE2)
IC252
FOCUS/ZOOM MOTOR DRIVE
IC252 UPD16833GS-E2
IC255
FOCUS/ZOOM PRE DRIVE
IC255 CXD2430N-T4
Q251 2SD2216J-QR(TX).SO AMP
Q252 2SD2216J-QR(TX).SO AMP
Q253 2SB1462J-QR(TX).SO ZOOM SENSOR SWITCH
CN113 23P
BIAS(+) HALL(+) BIAS(-) HALL(-) CONT(-) CONT(+) DRIVE(-) DRIVE(+) ZM_A ZM_B ZM_B ZM_A FC_A FC_B FC_B FC_A ZM SENSE_VCC FC_RST GND ZM_RST TEMP_COM TEMP_OUT
ZOOM LENS BLOCK
• ZOOM LENS BLOCK is replaced as a block, so that these SCHEMATIC DIAGRAM and PRINTED WIRING BOARD are omitted.
CN202 13P
PITCH_AD YAW_AD MT_GND XRST_POR C_RESET XCS_VST_AD VC_SI2 VC_SO2 XVC_SCK2 D_3.2V A_4.9V REG_GND CL
TO SE-61 BOARD CN451 (SEE PAGE 4-11)
HALL_OFFSET HALL_REF HALL_GAIN
24 TO VC-190 BOARD(11/12)
D_3.2V REG_GND
71 TO VC-190 BOARD(9/12)
A_4.9V MT_5.0V MT_GND
HALL_AD IRIS_PWM FC_RST_SENS LENS_RST_LED ZM_RST_SENS1 THERMAL_AD
25 TO VC-190 BOARD(8/12)
VC_SI VC_SO XVC_SCK XCS_SYSTEM
28 TO VC-190 BOARD(8/12)
MEMI_VD CL
29 TO VC-190 BOARD(4/12)
EVER_3.15V
30 TO VC-190 BOARD(12/12)
SYS_V XVC_RST VC_STBY C_RESET XCS_VST_AD VC_SI2 VC_SO2 XVC_SCK2 XRST_POR
27 TO VC-190 BOARD(8/12)
YAW_AD PITCH_AD
26 TO VC-190 BOARD(8/12)
R272 180k R264 180k R259 5600 R263 180k R258 100k R256 1k R257 22k R267 1k R254 10 1/10W 2012 R260 15k R255 10k R253 18k R252 100k R271 100k R251 18k R262 22k R265 18k R266 1500 R261 330 R275 4700 R270 68k R273 68k R269 47k R302 0 R303 0 R293 XX R300 0 R295 XX R299 XX R298 XX R296 XX R294 0 R297 XX R301 XX
C254 0.001u B C256 0.033u B 2012 C255 0.22u B 2012 C252 0.1u B C274 0.1u B C253 0.01u B C261 0.01u B C276 0.1u F C267 0.01u B C268 2.2u 6.3V TA C269 0.1u F C251 0.01u B C271 10u 4V TA A C272 XX C266 0.01u B C262 0.01u B C260 0.01u B C259 0.01u B C258 33u 6.3V TA B C263 1u F
L252 10uH 2520 L253 10uH 3225 FB251 0uH

09

- For schematic diagrams.
- Refer to page 4–15 for Printed Wiring Board.

VC-190 BOARD (CL BLOCK)





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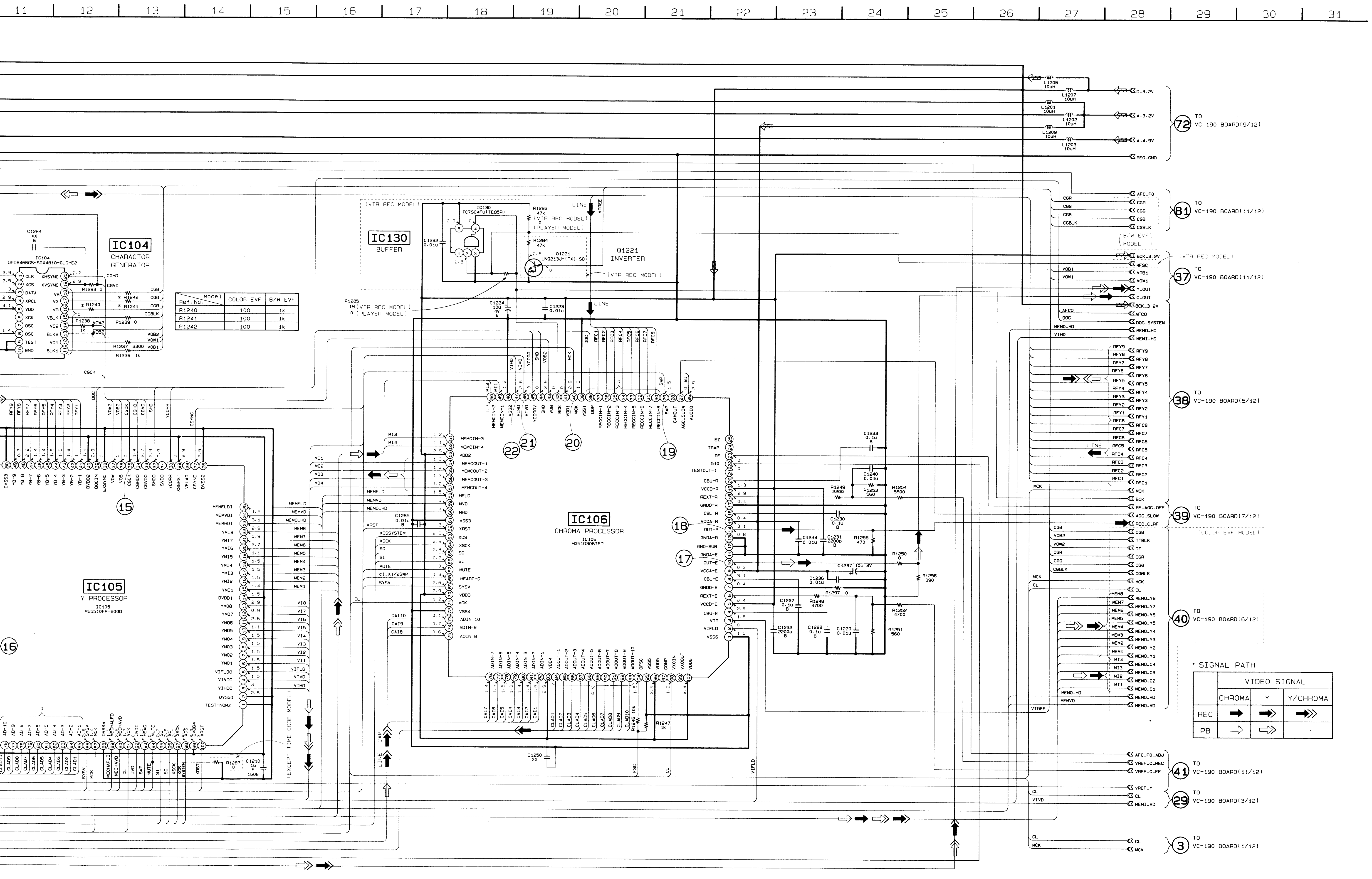
A
B
C
D
E
F
G
H
I
J
K
L
M
VC-190 BOARD (4/12)
Y/C PROCESS (CL BLOCK)
-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
VTR REC MODEL: CCD-TR930/TR920E
PLAYER MODEL: CCD-TR820E/TR825E
EXCEPT TIME CODE MODEL: CCD-TR930/TR820E/TR920E
COLOR EVF MODEL: CCD-TR930/TR920E
B/W EVF MODEL: CCD-TR820E/TR825E
TO VC-190 BOARD (12/12) ㉜
CGBLK
CGB
CGG
CGR
CG_VD
TO VC-190 BOARD (12/12) ㉝
XSYS_RST
XCS_OSD
XOSD_SCK
OSD_SO
TO VC-190 BOARD (8/12) ㉞
TO VC-190 BOARD (2/12) ㉛
TO VC-190 BOARD (2/12) ㉒
TO VC-190 BOARD (2/12) ㉓
TO VC-190 BOARD (10/12) ㉟
TO VC-190 BOARD (1/12, 2/12) ⑫
TO VC-190 BOARD (5/12) ㊱
IC104
CHARACTOR GENERATOR
IC104 UPD6466GS-SGX4810-GLG-E2
IC105
Y PROCESSOR
IC105 M55510FP-6000
Q1201, 1202
VCO
Q1203
Y BUFFER
Q1220
TRAP SWITCH
LINE
CAM
⑮
⑯
Model
Ref.No.
R1240
R1241
R1242


11
12
13
14
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16
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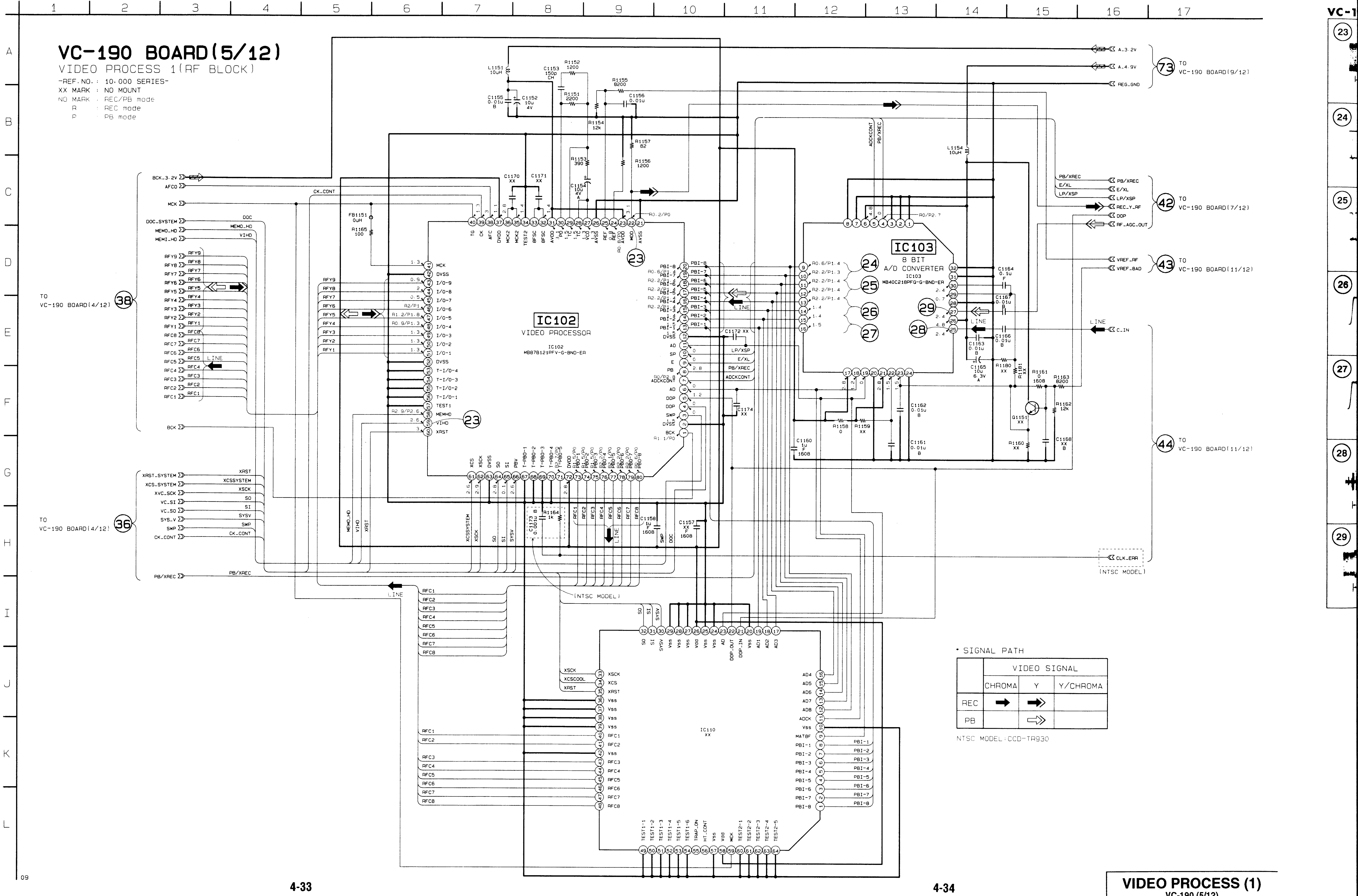
31
IC104
CHARACTOR GENERATOR
IC104
UPD6466GS-SGX4B10-GLG-E2
C1284 XX B
IC130
BUFFER
(VTR REC MODEL)
IC130 TC7S04FU(TE85R)
R1283 47k (VTR REC MODEL) 0 (PLAYER MODEL)
R1284 47k
Q1221 UN9213J-(TX).SO
Q1221
INVERTER
(VTR REC MODEL)
R1285 1M (VTR REC MODEL) 0 (PLAYER MODEL)
C1282 0.01u
C1224 10u 4V A
C1223 0.01u
LINE
VTREE
IC105
Y PROCESSOR
IC105 M65510FP-600D
IC106
CHROMA PROCESSOR
IC106 HG51D306TETL
C1285 0.01u B
C1250 XX
R1287 0
C1210 1u F 1608
(EXCEPT TIME CODE MODEL)
LINE CAM
R1247 1k
R1246 10k
C1233 0.1u B
C1240 0.01u
R1249 2200
R1253 560
R1254 5600
C1230 0.1u B
C1234 0.01u
C1231 2200p B
R1255 470
R1250 0
C1237 10u 4V
R1256 390
C1236 0.01u
R1297 0
C1227 0.1u B
R1248 4700
R1252 4700
C1232 2200p B
C1228 0.1u B
C1229 0.01u
R1251 560
15
16
17
18
19
20
21
22
L1206 10uH
L1207 10uH
L1201 10uH
L1202 10uH
L1209 10uH
L1203 10uH
D_3.2V
A_3.2V
A_4.9V
REG_GND
72 TO VC-190 BOARD(9/12)
AFC_FO
CGR
CGG
CGB
CGBLK
(B/W EVF MODEL)
81 TO VC-190 BOARD(11/12)
BCK_3.2V
4FSC
VOB1
VOW1
Y_OUT
C_OUT
BCK_3.2V
AFCO
DOC
DOC_SYSTEM
MEMO_HD
MEMI_HD
(VTR REC MODEL)
37 TO VC-190 BOARD(11/12)
RFY9
RFY8
RFY7
RFY6
RFY5
RFY4
RFY3
RFY2
RFY1
RFC8
RFC7
RFC6
RFC5
RFC4
RFC3
RFC2
RFC1
38 TO VC-190 BOARD(5/12)
MCK
BCK
RF_AGC_OFF
AGC_SLOW
REC_C_RF
39 TO VC-190 BOARD(7/12)
CGB
TTBLK
TT
CGR
CGG
CGBLK
MCK
CL
(COLOR EVF MODEL)
MEMO_Y8
MEMO_Y7
MEMO_Y6
MEMO_Y5
MEMO_Y4
MEMO_Y3
MEMO_Y2
MEMO_Y1
MEMO_C4
MEMO_C3
MEMO_C2
MEMO_C1
MEMO_HD
MEMO_VD
40 TO VC-190 BOARD(6/12)
AFC_FO_ADJ
VREF_C_REC
VREF_C_EE
41 TO VC-190 BOARD(11/12)
VREF_Y
CL
MEMI_VD
29 TO VC-190 BOARD(3/12)
CL
MCK
3 TO VC-190 BOARD(1/12)

Ref.No. \ Model	COLOR EVF	B/W EVF
R1240	100	1k
R1241	100	1k
R1242	100	1k

* SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	⇛	⇛
PB	⇨	⇨	

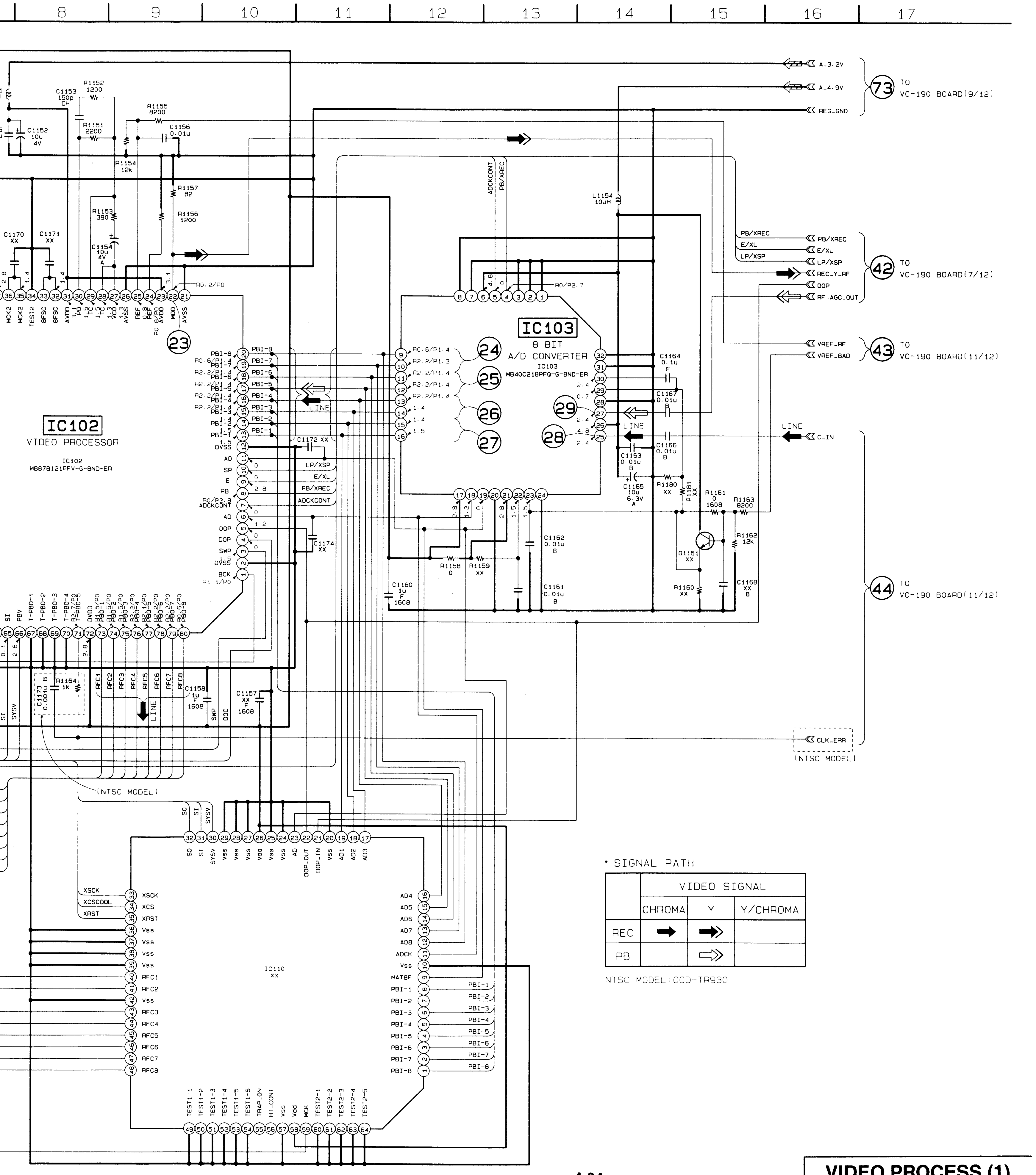
- **For schematic diagrams.**
- Refer to page 4-15 for Printed Wiring Board.


VC-190 BOARD(5/12)
VIDEO PROCESS 1(RF BLOCK)
-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
R : REC mode
P : PB mode
IC102
VIDEO PROCESSOR
IC102 MB87B121PFV-G-BND-ER
IC103
8 BIT A/D CONVERTER
IC103 MB40C218PFQ-G-BND-ER
IC110 XX
TO VC-190 BOARD(4/12) 38
TO VC-190 BOARD(4/12) 36
TO VC-190 BOARD(9/12) 73
TO VC-190 BOARD(7/12) 42
TO VC-190 BOARD(11/12) 43
TO VC-190 BOARD(11/12) 44
A_3.2V
A_4.9V
REG_GND
PB/XREC
E/XL
LP/XSP
REC_Y_RF
DOP
RF_AGC_OUT
VREF_RF
VREF_BAD
C_IN
CLK_ERR
(NTSC MODEL)
BCK_3.2V
AFCO
MCK
DOC_SYSTEM
MEMO_HD
MEMI_HD
RFY9
RFY8
RFY7
RFY6
RFY5
RFY4
RFY3
RFY2
RFY1
RFC8
RFC7
RFC6
RFC5
RFC4
RFC3
RFC2
RFC1
BCK
XRST_SYSTEM
XCS_SYSTEM
XVC_SCK
VC_SI
VC_SO
SYS_V
SWP
CK_CONT
PB/XREC
LINE
L1151 10uH
L1154 10uH
FB1151 0uH
R1165 100
C1153 150p CH
R1152 1200
R1151 2200
R1155 8200
C1156 0.01u
C1155 0.01u B
C1152 10u 4V
R1154 12k
R1157 82
R1153 390
R1156 1200
C1154 10u 4V
C1170 XX
C1171 XX
C1172 XX
C1174 XX
C1164 0.1u F
C1167 0.01u B
C1166 0.01u B
C1163 0.01u B
C1165 10u 6.3V A
R1180 XX
R1181 XX
R1161 0 1608
R1163 8200
R1162 12k
Q1151 XX
R1160 XX
C1168 XX B
C1162 0.01u B
C1161 0.01u B
C1160 1u F 1608
R1158 0
R1159 XX
C1173 0.001u B
R1164 1k
C1158 1u F 1608
C1157 XX F 1608
23
24
25
26
27
28
29

SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	⇛	
PB		⇨	

NTSC MODEL: CCD-TR930

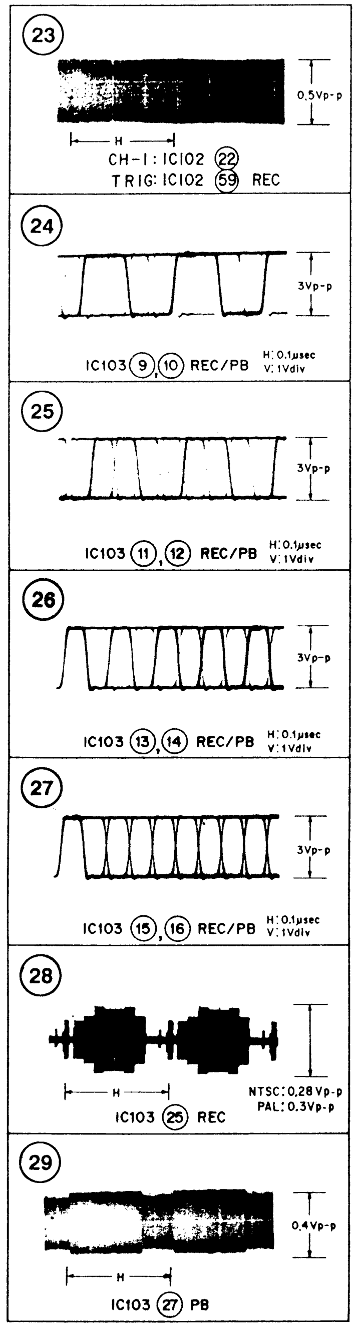

IC102
VIDEO PROCESSOR
IC102
MB87B121PFV-G-BND-ER
IC103
8 BIT
A/D CONVERTER
IC103
MB40C218PFQ-G-BND-ER
IC110
XX
A_3.2V
A_4.9V
REG_GND
TO VC-190 BOARD(9/12)
PB/XREC
E/XL
LP/XSP
REC_Y_RF
DOP
RF_AGC_OUT
TO VC-190 BOARD(7/12)
VREF_RF
VREF_BAD
TO VC-190 BOARD(11/12)
C_IN
LINE
TO VC-190 BOARD(11/12)
CLK_ERR
(NTSC MODEL)
(NTSC MODEL)
L1154 10uH
Q1151 XX
ADCKCONT
PB/XREC
(73)
(42)
(43)
(44)
(23)
(24)
(25)
(26)
(27)
(28)
(29)

• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡	
PB		⇨	

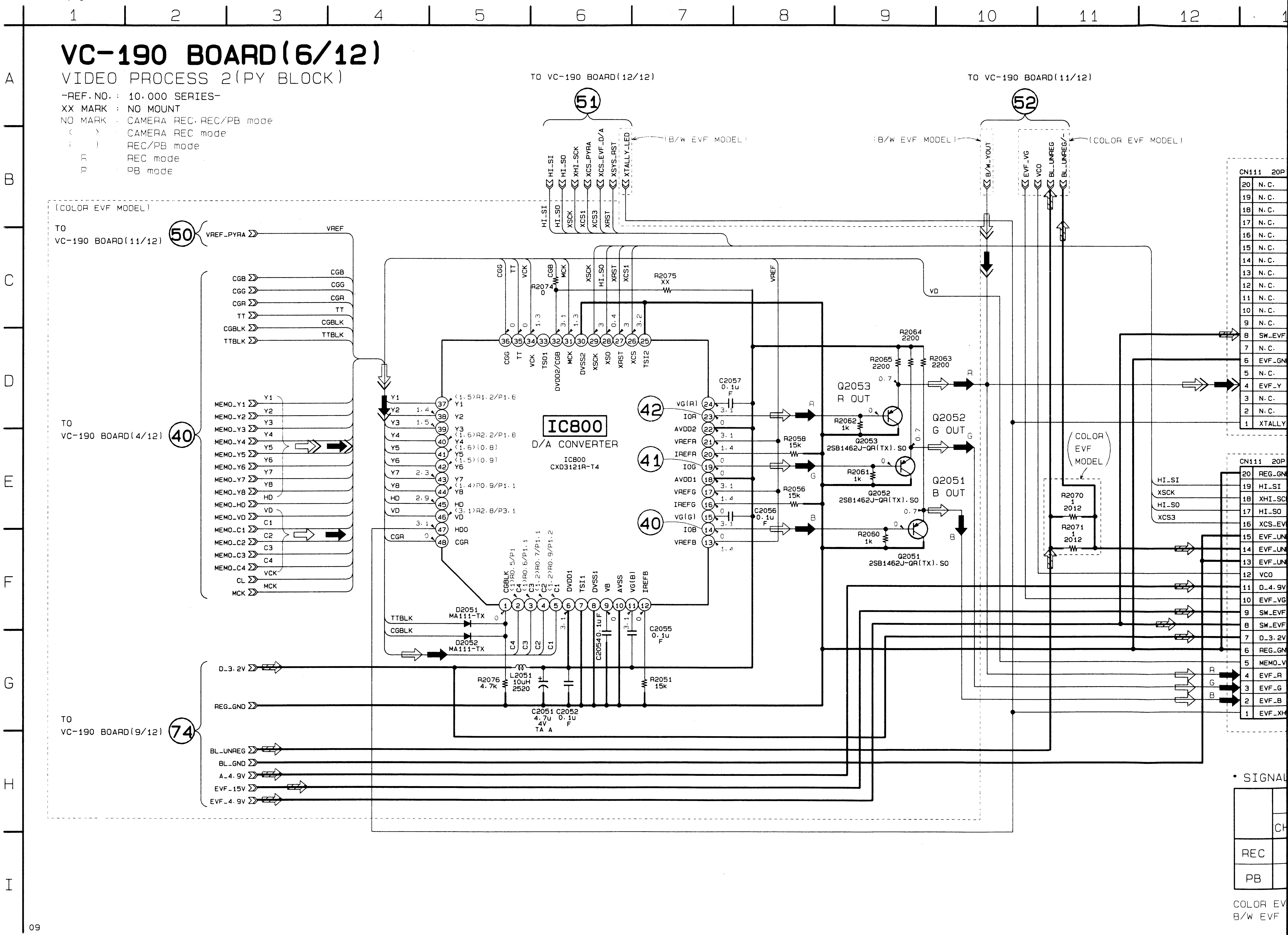
NTSC MODEL:CCD-TR930

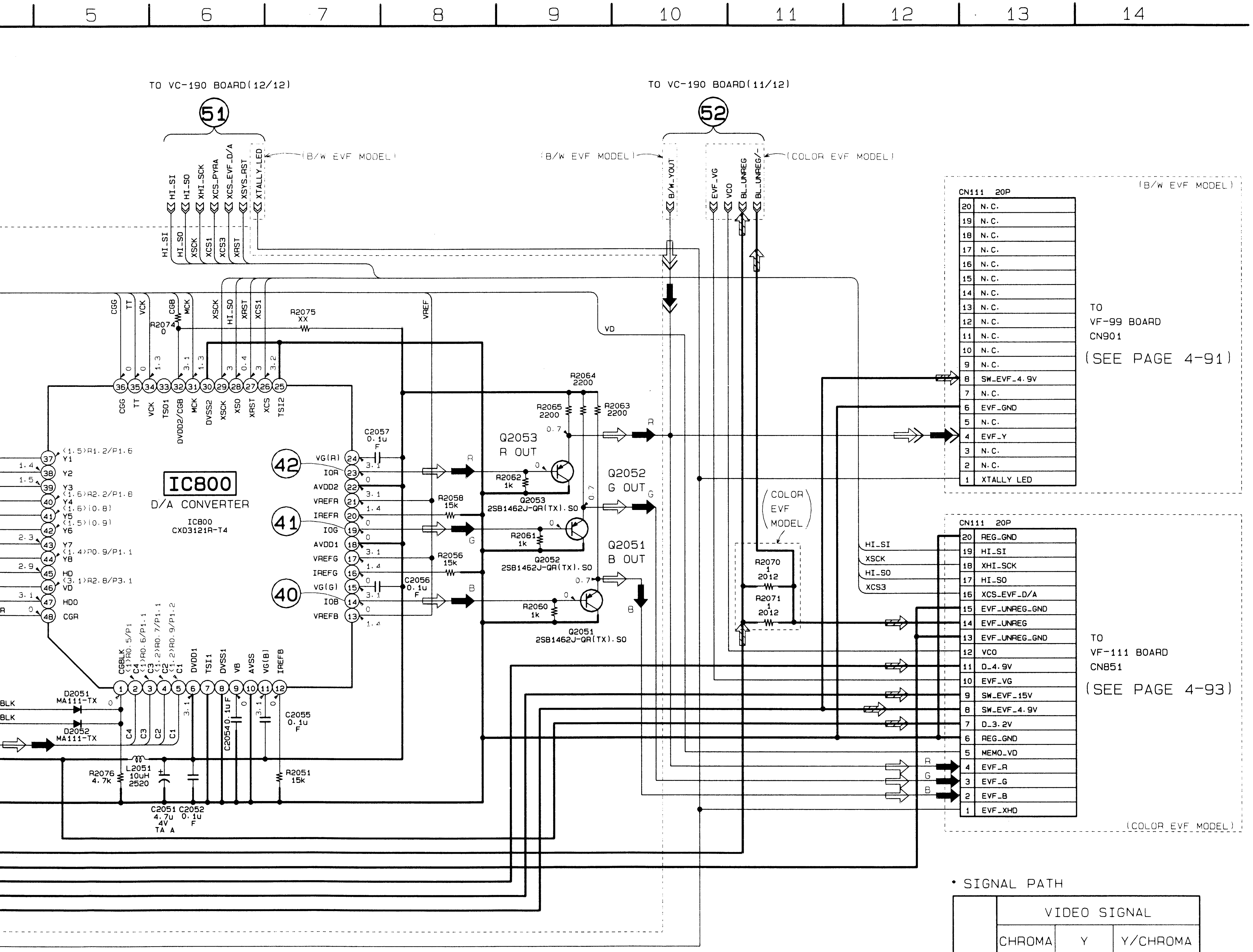
VC-190 BOARD (RF BLOCK)



VIDEO PROCESS (1)
VC-190 (5/12)

- For schematic diagrams.
- Refer to page 4-15 for Printed Wiring Board.


VC-190 BOARD(6/12)
VIDEO PROCESS 2(PY BLOCK)
-REF. NO. : 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC, REC/PB mode
( ) CAMERA REC mode
[ ] REC/PB mode
R REC mode
P PB mode
1 2 3 4 5 6 7 8 9 10 11 12
A B C D E F G H I
(COLOR EVF MODEL)
TO VC-190 BOARD(11/12) (50) VREF_PYRA VREF
CGB CGG CGR TT CGBLK TTBLK
TO VC-190 BOARD(4/12) (40)
MEMO_Y1 MEMO_Y2 MEMO_Y3 MEMO_Y4 MEMO_Y5 MEMO_Y6 MEMO_Y7 MEMO_Y8 MEMO_HD MEMO_VD MEMO_C1 MEMO_C2 MEMO_C3 MEMO_C4 CL MCK
Y1 Y2 Y3 Y4 Y5 Y6 Y7 Y8 HD VD C1 C2 C3 C4 VCK MCK
TO VC-190 BOARD(9/12) (74)
D_3.2V REG_GND BL_UNREG BL_GND A_4.9V EVF_15V EVF_4.9V
TO VC-190 BOARD(12/12) (51)
HI_SI HI_SO XHI_SCK XCS_PYRA XCS_EVF_D/A XSYS_RST XTALLY_LED
(B/W EVF MODEL)
HI_SI HI_SO XSCK XCS1 XCS3 XRST
TO VC-190 BOARD(11/12) (52)
B/W_YOUT EVF_VG VCO BL_UNREG BL_UNREG/-
(COLOR EVF MODEL)
IC800 D/A CONVERTER IC800 CXD3121R-T4
(42) (41) (40)
VG(R) IOR AVDD2 VREFR IREFR IOG AVDD1 VREFG IREFG VG(G) IOB VREFB
CGG TT VCK TSO1 DVDD2/CGB MCK DVSS2 XSCK XSO XRST XCS TSI2
CGBLK C4 C3 C2 C1 DVDD1 TSI1 DVSS1 VB AVSS VG(B) IREFB
Y1 Y2 Y3 Y4 Y5 Y6 Y7 Y8 HD VD HDO CGR
R2074 0
R2075 XX
C2057 0.1u F
C2056 0.1u F
C2055 0.1u F
C2054 0.1u F
R2058 15k
R2056 15k
R2051 15k
R2076 4.7k
L2051 10uH 2520
C2051 4.7u 4V TA A
C2052 0.1u F
D2051 MA111-TX
D2052 MA111-TX
TTBLK CGBLK
R2064 2200
R2065 2200
R2063 2200
Q2053 R OUT
R2062 1k
Q2053 2SB1462J-QR(TX).SO
Q2052 G OUT
R2061 1k
Q2052 2SB1462J-QR(TX).SO
Q2051 B OUT
R2060 1k
Q2051 2SB1462J-QR(TX).SO
R2070 1 2012
R2071 1 2012
(COLOR EVF MODEL)
VD VREF
CN111 20P
20 N.C. 19 N.C. 18 N.C. 17 N.C. 16 N.C. 15 N.C. 14 N.C. 13 N.C. 12 N.C. 11 N.C. 10 N.C. 9 N.C. 8 SW_EVF 7 N.C. 6 EVF_GN 5 N.C. 4 EVF_Y 3 N.C. 2 N.C. 1 XTALLY
CN111 20P
20 REG_GN 19 HI_SI 18 XHI_SC 17 HI_SO 16 XCS_EV 15 EVF_UN 14 EVF_UN 13 EVF_UN 12 VCO 11 D_4.9V 10 EVF_VG 9 SW_EVF 8 SW_EVF 7 D_3.2V 6 REG_GN 5 MEMO_V 4 EVF_R 3 EVF_G 2 EVF_B 1 EVF_XH
HI_SI XSCK HI_SO XCS3
R G B
• SIGNAL
CH
REC
PB
COLOR EV
B/W EVF
09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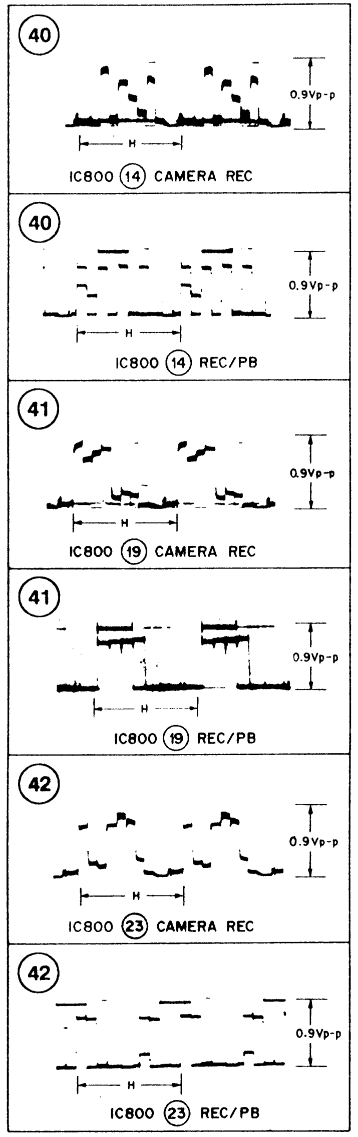
11
12
13
14
TO VC-190 BOARD(12/12)
51
TO VC-190 BOARD(11/12)
52
(B/W EVF MODEL)
(COLOR EVF MODEL)
HI_SI
HI_SO
XHI_SCK
XCS_PYRA
XCS_EVF_D/A
XSYS_RST
XTALLY_LED
B/W_YOUT
EVF_VG
VCO
BL_UNREG
BL_UNREG/-
XSCK
XCS1
XCS3
XRST
CGG
TT
VCK
CGB
MCK
XSO
R2074 0
R2075 XX
VREF
VD
IC800
D/A CONVERTER
IC800
CXD3121R-T4
VG(R)
IOR
AVDD2
VREFR
IREFR
IOG
AVDD1
VREFG
IREFG
VG(G)
IOB
VREFB
Y1
Y2
Y3
Y4
Y5
Y6
Y7
Y8
HD
VD
HDO
CGR
TSO1
DVDD2/CGB
DVSS2
XCS
TSI2
CGBLK
C4
C3
C2
C1
DVDD1
TSI1
DVSS1
VB
AVSS
VG(B)
IREFB
42
41
40
C2057 0.1u F
C2056 0.1u F
R2058 15k
R2056 15k
R2064 2200
R2065 2200
R2063 2200
Q2053 R OUT
R2062 1k
Q2053 2SB1462J-QR(TX).SO
Q2052 G OUT
R2061 1k
Q2052 2SB1462J-QR(TX).SO
Q2051 B OUT
R2060 1k
Q2051 2SB1462J-QR(TX).SO
R
G
B
(COLOR EVF MODEL)
R2070 1 2012
R2071 1 2012
D2051 MA111-TX
D2052 MA111-TX
BLK
R2076 4.7k
L2051 10uH 2520
C2051 4.7u 4V TA A
C2052 0.1u F
C2054 0.1uF
C2055 0.1u F
R2051 15k
HI_SI
XSCK
HI_SO
XCS3
CN111 20P
20 N.C.
19 N.C.
18 N.C.
17 N.C.
16 N.C.
15 N.C.
14 N.C.
13 N.C.
12 N.C.
11 N.C.
10 N.C.
9 N.C.
8 SW_EVF_4.9V
7 N.C.
6 EVF_GND
5 N.C.
4 EVF_Y
3 N.C.
2 N.C.
1 XTALLY LED
TO VF-99 BOARD CN901
(SEE PAGE 4-91)
CN111 20P
20 REG_GND
19 HI_SI
18 XHI_SCK
17 HI_SO
16 XCS_EVF_D/A
15 EVF_UNREG_GND
14 EVF_UNREG
13 EVF_UNREG_GND
12 VCO
11 D_4.9V
10 EVF_VG
9 SW_EVF_15V
8 SW_EVF_4.9V
7 D_3.2V
6 REG_GND
5 MEMO_VD
4 EVF_R
3 EVF_G
2 EVF_B
1 EVF_XHD
TO VF-111 BOARD CN851
(SEE PAGE 4-93)

VC-190 BOARD (PY BLOCK)
(COLOR EVF MODEL)

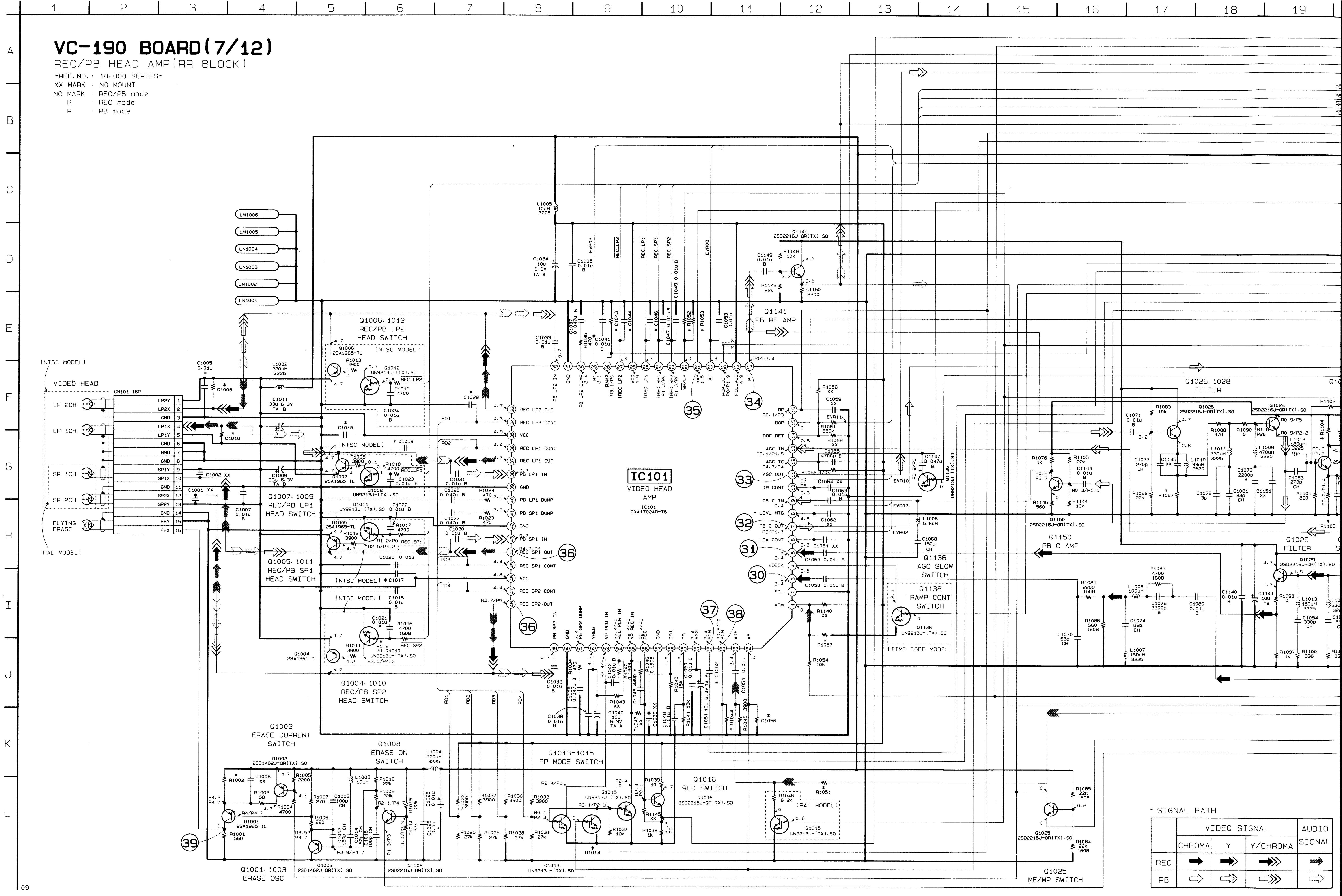


- SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡	
PB	⇨	⇨	

COLOR EVF MODEL:CCD-TR930/920E
B/W EVF MODEL:CCD-TR820E/TR825E

- **For schematic diagrams.**
- Refer to page 4–15 for Printed Wiring Board.



VC-190 BOARD(7/12)

REC/PB HEAD AMP(RR BLOCK)

-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
R : REC mode
P : PB mode

1
2
3
4
5
6
7
8
9
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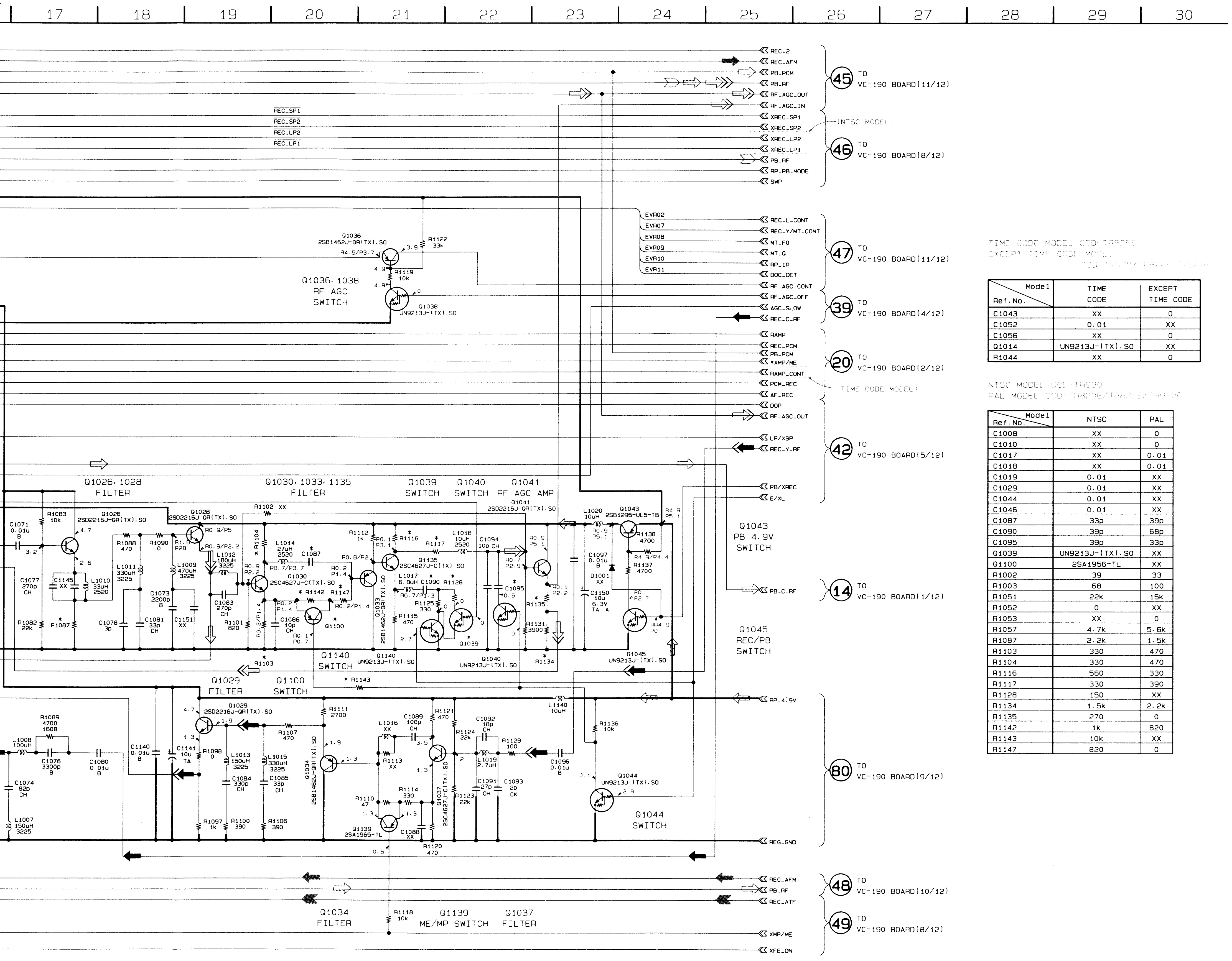
11
12
13
14
15
16
17
18
19
A
B
C
D
E
F
G
H
I
J
K
L
(NTSC MODEL)
VIDEO HEAD
LP 2CH
LP 1CH
SP 1CH
SP 2CH
FLYING ERASE
(PAL MODEL)
CN101 16P
LP2Y
LP2X
GND
LP1X
LP1Y
GND
GND
GND
SP1Y
SP1X
GND
SP2X
SP2Y
GND
FEY
FEX
LN1006
LN1005
LN1004
LN1003
LN1002
LN1001
L1002 220uH 3225
C1005 0.01u B
C1008
C1010
C1011 33u 6.3V TA B
C1009 33u 6.3V TA B
C1002 XX
C1001 XX
C1007 0.01u B
Q1006,1012 REC/PB LP2 HEAD SWITCH
Q1006 2SA1965-TL
Q1012 UN9213J-(TX).SO
R1013 3900
R1019 4700
C1024 0.01u B
C1018
C1019
Q1007,1009 REC/PB LP1 HEAD SWITCH
Q1007 2SA1965-TL
Q1009 UN9213J-(TX).SO
R1008 3900
R1018 4700
C1023 0.01u B
Q1011 UN9213J-(TX).SO
C1022 0.01u B
Q1005,1011 REC/PB SP1 HEAD SWITCH
Q1005 2SA1965-TL
R1012 3900
R1017 4700
C1020 0.01u
C1017
C1015 0.01u B
Q1004 2SA1965-TL
Q1010 UN9213J-(TX).SO
R1011 3900
R1016 4700
C1021 0.01u B
Q1004,1010 REC/PB SP2 HEAD SWITCH
(NTSC MODEL)
REC.LP2
REC.LP1
REC.SP1
REC.SP2
RD1
RD2
RD3
RD4
C1029
C1031 0.01u B
C1028 0.047u B
R1024 470
C1027 0.047u B
R1023 470
C1030 0.01u B
L1005 10uH 3225
C1034 10u 6.3V TA A
C1035 0.01u B
C1033 0.01u B
C1037 0.047u B
R1035 470
C1041 0.01u B
C1043
C1044
C1046
C1047 0.01u B
C1049 0.01u B
R1052
R1053
C1053 0.01u
EVR09
REC.LP2
REC.LP1
REC.SP1
REC.SP2
EVR08
IC101
VIDEO HEAD AMP
IC101 CXA1702AR-T6
REC LP2 OUT
REC LP2 CONT
VCC
REC LP1 CONT
REC LP1 OUT
PB LP1 IN
GND
PB LP1 DUMP
PB SP1 DUMP
GND
PB SP1 IN
REC SP1 OUT
REC SP1 CONT
VCC
REC SP2 CONT
REC SP2 OUT
PB SP2 IN
GND
PB SP2 DUMP
VREG
VP PCM IN
REC PCM IN
VP REC
REC
GND
IR
IR1
VG2
PCM
ATF
AF
AFM
FIL
XDECK
LOW CONT
PB C OUT
Y LEVL MTG
PB C IN
IR CONT
AGC OUT
AGC TC
AGC IN
DOC DET
DOP
RP
MT
FIL
PCM_OUT
SWP
SP/LP
IREC SP1
IREC LP1
VCC
RAMP
MT
PB LP2 DUMP
GND
PB LP2 IN
C1032 0.01u B
C1036 0.047u B
C1039 0.01u B
C1040 10u 6.3V TA A
C1042 0.01u B
R1043 XX
C1045 330p B
R1046 0 1608
R1047 XX
C1038 XX
R1040 15k
R1041 18k
C1048 0.01u B
C1050 0.01u B
C1051 10u 6.3V TA A
C1052
C1054 0.01u
R1044
R1045 3900
C1056
R1058 XX
C1059 XX
EVR11
R1061 680k
R1059 XX
C1065 4700p B
R1062 470k
C1064 XX
C1063 0.01u B
C1062 XX
C1061 XX
C1060 0.01u B
C1058 0.01u B
R1140 XX
R1057
R1054 10k
Q1141 2SD2216J-QR(TX).SO
C1149 0.01u B
R1148 10k
R1149 22k
R1150 2200
Q1141 PB RF AMP
Q1136 UN9213J-(TX).SO
C1147 0.047u B
EVR10
EVR07
EVR02
L1006 5.6uH
C1068 150p CH
Q1136 AGC SLOW SWITCH
Q1138 RAMP CONT SWITCH
Q1138 UN9213J-(TX).SO
(TIME CODE MODEL)
Q1026,1028 FILTER
Q1026 2SD2216J-QR(TX).SO
Q1028 2SD2216J-QR(TX).SO
C1071 0.01u B
R1083 10k
R1088 470
R1090 0
L1012 180uH 3225
L1011 330uH 3225
L1009 470uH 3225
L1010 33uH 2520
C1145 XX
C1077 270p CH
R1082 22k
R1087
C1078 3p
C1073 2200p B
C1081 33p CH
C1151 XX
C1083 270p CH
R1101 820
R1102
R1104
R1103
R1076 1k
R1105 22k
C1144 0.01u B
R1144 10k
R1146 560
Q1150 2SD2216J-QR(TX).SO
Q1150 PB C AMP
Q1029 FILTER
Q1029 2SD2216J-QR(TX).SO
R1089 4700 1608
L1008 100uH
C1076 3300p B
C1080 0.01u B
C1140 0.01u B
C1141 10u TA
R1098 0
L1013 150uH 3225
C1084 330p CH
R1097 1k
R1100 390
R1081 2200 1608
R1086 560 1608
C1074 82p CH
C1070 68p CH
L1007 150uH 3225
Q1002 ERASE CURRENT SWITCH
Q1002 2SB1462J-QR(TX).SO
R1002
C1006 XX
R1005 2200
R1003 68
R1004 4700
Q1001 2SA1965-TL
R1001 560
Q1001,1003 ERASE OSC
Q1003 2SB1462J-QR(TX).SO
R1007 270
C1013 100p CH
R1006 220
C1012 150p CH
C1014 82p CH
C1016 100p CH
L1003 10uH
Q1008 ERASE ON SWITCH
L1004 220uH 3225
R1010 22k
R1009 33k
R1015 22k
R1014 22k
C1026 0.01u B
C1025 0.01u F
Q1008 2SD2216J-QR(TX).SO
R1022 3900
R1027 3900
R1030 3900
R1033 3900
R1020 27k
R1025 27k
R1028 27k
R1031 27k
Q1013-1015 RP MODE SWITCH
Q1015 UN9213J-(TX).SO
Q1013 UN9213J-(TX).SO
Q1014
R1037 10k
R1038 1k
R1039 10
R1145 XX
Q1016 REC SWITCH
Q1016 2SD2216J-QR(TX).SO
R1051
R1048 8.2k
(PAL MODEL)
Q1018 UN9213J-(TX).SO
R1085 22k 1608
R1084 22k 1608
Q1025 2SD2216J-QR(TX).SO
Q1025 ME/MP SWITCH
09

- SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡≫	➡
PB	⇨	⇨≫	⇨≫	⇨


17
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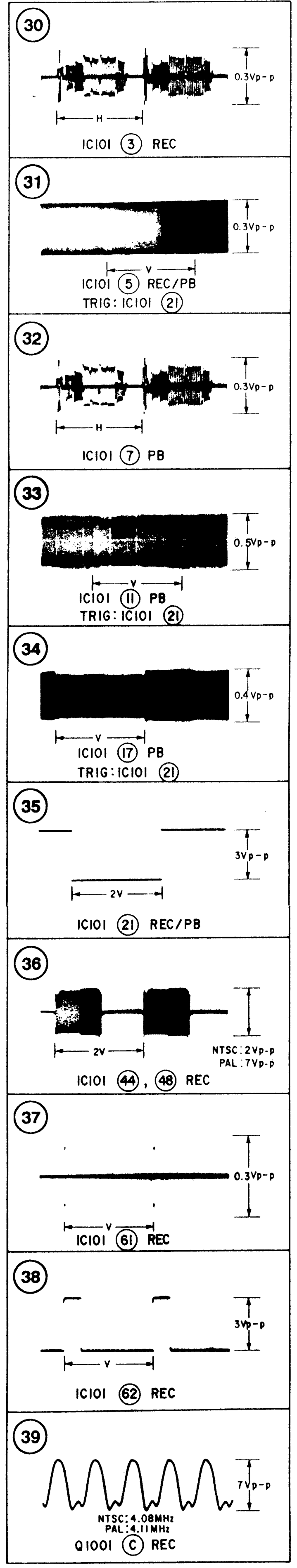
23
24
25
26
27
28
29
30
REC_2
REC_AFM
PB_PCM
PB_RF
RF_AGC_OUT
RF_AGC_IN
45 TO VC-190 BOARD(11/12)
REC_SP1
REC_SP2
REC_LP2
REC_LP1
XREC_SP1
XREC_SP2
XREC_LP2
XREC_LP1
PB_RF
RP_PB_MODE
SWP
INTSC MODEL
46 TO VC-190 BOARD(8/12)
EVR02
EVR07
EVR08
EVR09
EVR10
EVR11
REC_L_CONT
REC_Y/MT_CONT
MT_FO
MT_Q
RP_IR
DOC_DET
47 TO VC-190 BOARD(11/12)
RF_AGC_CONT
RF_AGC_OFF
AGC_SLOW
REC_C_RF
39 TO VC-190 BOARD(4/12)
RAMP
REC_PCM
PB_PCM
XMP/ME
RAMP_CONT
PCM_REC
AF_REC
DOP
RF_AGC_OUT
20 TO VC-190 BOARD(2/12)
(TIME CODE MODEL)
LP/XSP
REC_Y_RF
42 TO VC-190 BOARD(5/12)
PB/XREC
E/XL
Q1036, 1038 RF AGC SWITCH
Q1026, 1028 FILTER
Q1030, 1033, 1135 FILTER
Q1039 SWITCH
Q1040 SWITCH
Q1041 RF AGC AMP
Q1043 PB 4.9V SWITCH
PB_C_RF
14 TO VC-190 BOARD(1/12)
Q1045 REC/PB SWITCH
Q1140 SWITCH
Q1029 FILTER
Q1100 SWITCH
RP_4.9V
80 TO VC-190 BOARD(9/12)
Q1044 SWITCH
REG_GND
REC_AFM
PB_RF
REC_ATF
48 TO VC-190 BOARD(10/12)
XMP/ME
XFE_ON
49 TO VC-190 BOARD(8/12)
Q1034 FILTER
Q1139 ME/MP SWITCH
Q1037 FILTER

VC-190 BOARD (RR BLOCK)



TIME CODE MODEL : CCD-TR825E
EXCEPT TIME CODE MODEL :
CCD-TR820E/TR920E/TR930

Model / Ref. No.	TIME CODE	EXCEPT TIME CODE
C1043	XX	0
C1052	0.01	XX
C1056	XX	0
Q1014	UN9213J-(TX).SO	XX
R1044	XX	0

NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR820E/TR825E/TR920E

Model / Ref. No.	NTSC	PAL
C1008	XX	0
C1010	XX	0
C1017	XX	0.01
C1018	XX	0.01
C1019	0.01	XX
C1029	0.01	XX
C1044	0.01	XX
C1046	0.01	XX
C1087	33p	39p
C1090	39p	68p
C1095	39p	33p
Q1039	UN9213J-(TX).SO	XX
Q1100	2SA1956-TL	XX
R1002	39	33
R1003	68	100
R1051	22k	15k
R1052	0	XX
R1053	XX	0
R1057	4.7k	5.6k
R1087	2.2k	1.5k
R1103	330	470
R1104	330	470
R1116	560	330
R1117	330	390
R1128	150	XX
R1134	1.5k	2.2k
R1135	270	0
R1142	1k	820
R1143	10k	XX
R1147	820	0

• SIGNAL PATH

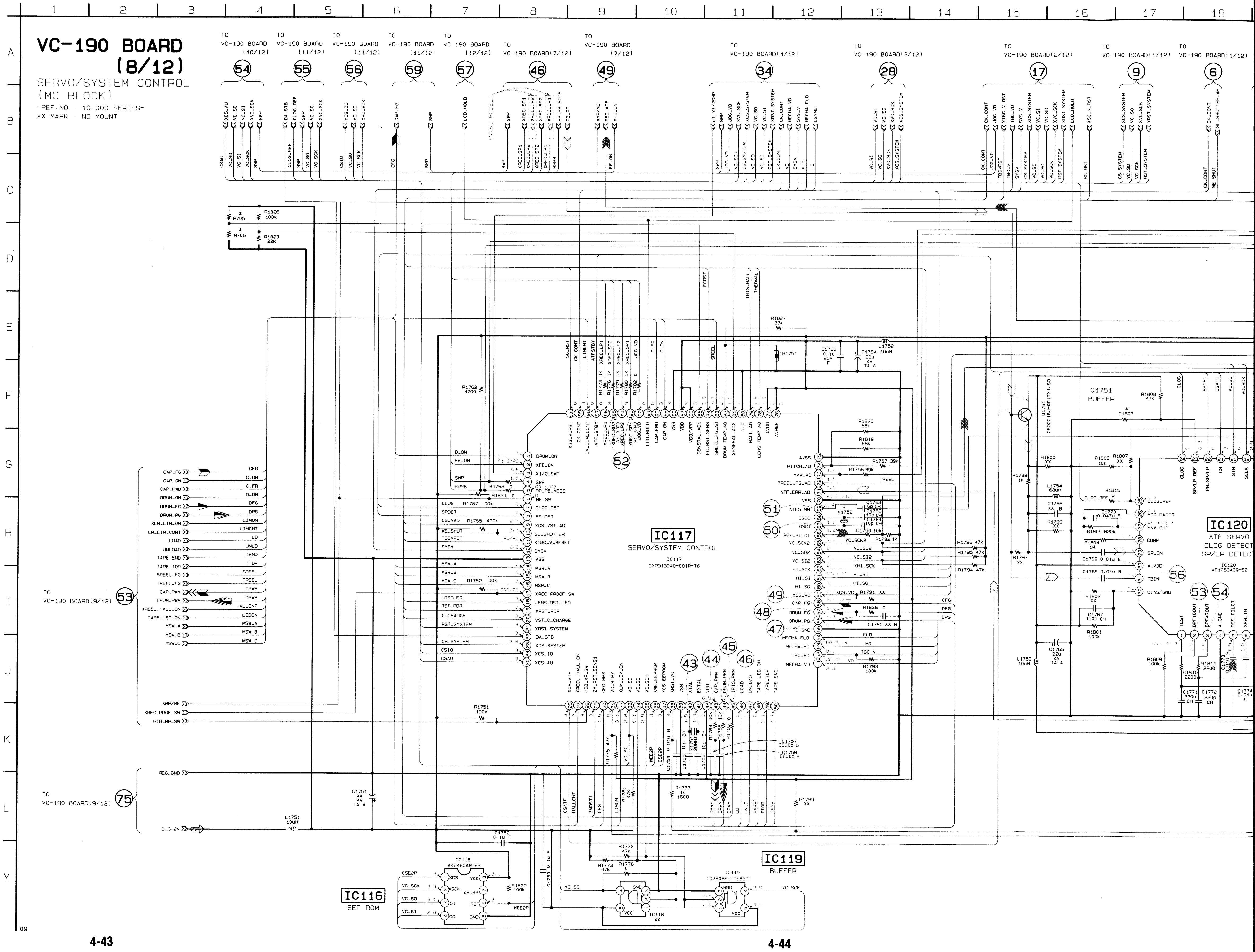
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡>	➡>>	➡
PB	⇨	⇨>	⇨>>	⇨

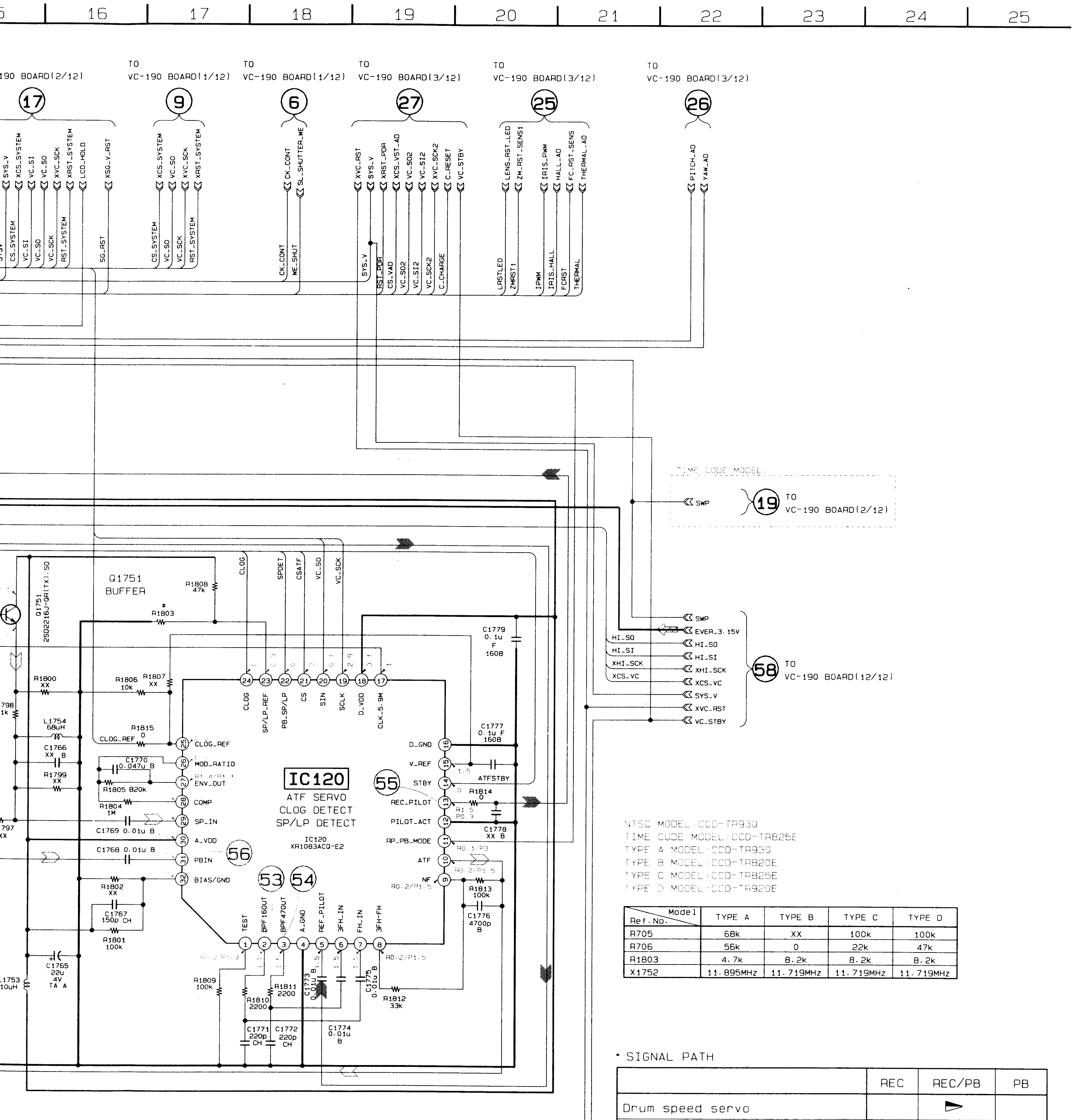
• SIGNAL PATH

	REC	REC/PB	PB
Ref. signal	➡		⇨

REC/PB HEAD AMP
VC-190 (7/12)

- For schematic diagrams.
- Refer to page 4–15 for Printed Wiring Board.


VC-190 BOARD (8/12)
SERVO/SYSTEM CONTROL
(MC BLOCK)
-REF. NO.: 10,000 SERIES-
XX MARK : NO MOUNT
IC117
SERVO/SYSTEM CONTROL
IC117 CXP913040-001R-T6
IC120
ATF SERVO
CLOG DETECT
SP/LP DETECT
IC120 XR1083ACQ-E2
IC116
EEP ROM
IC116 AK6480AM-E2
IC119
BUFFER
IC119 TC7S08FU(TE85R)
IC118
Q1751
BUFFER
TO VC-190 BOARD (10/12)
TO VC-190 BOARD (11/12)
TO VC-190 BOARD (12/12)
TO VC-190 BOARD (7/12)
TO VC-190 BOARD (4/12)
TO VC-190 BOARD (3/12)
TO VC-190 BOARD (2/12)
TO VC-190 BOARD (1/12)
TO VC-190 BOARD (9/12)
54
55
56
59
57
46
49
34
28
17
9
6
53
75
52
51
50
48
47
43
44
45
REG_GND
D_3.2V


16
17
18
19
20
21
22
23
24
25
190 BOARD(2/12)
17
SYS_V
XCS_SYSTEM
VC_SI
VC_SO
XVC_SCK
XRST_SYSTEM
LCD_HOLD
XSG_V_RST
CS_SYSTEM
RST_SYSTEM
SG_RST
TO
VC-190 BOARD(1/12)
9
XCS_SYSTEM
VC_SO
XVC_SCK
XRST_SYSTEM
VC_SCK
TO
VC-190 BOARD(1/12)
6
CK_CONT
SL_SHUTTER_WE
WE_SHUT
TO
VC-190 BOARD(3/12)
27
XVC_RST
SYS_V
XRST_POR
XCS_VST_AD
VC_SO2
VC_SI2
XVC_SCK2
C_RESET
VC_STBY
RST_POR
CS_VAD
VC_SCK2
C_CHARGE
TO
VC-190 BOARD(3/12)
25
LENS_RST_LED
ZM_RST_SENS1
IRIS_PWM
HALL_AD
FC_RST_SENS
THERMAL_AD
LRSTLED
ZMRST1
IPWM
IRIS_HALL
FCRST
THERMAL
TO
VC-190 BOARD(3/12)
26
PITCH_AD
YAW_AD
TIME CODE MODEL
SWP
19
TO
VC-190 BOARD(2/12)
SWP
EVER_3.15V
HI_SO
HI_SI
XHI_SCK
XCS_VC
SYS_V
XVC_RST
VC_STBY
58
TO
VC-190 BOARD(12/12)
Q1751
BUFFER
Q1751
2SD2216J-QR(TX).SO
R1808
47k
*
R1803
CLOG
SPDET
CSATF
VC_SO
VC_SCK
C1779
0.1u
F
1608
R1800
XX
R1806
10k
R1807
XX
L1754
68uH
C1766
XX B
R1799
XX
R1815
0
CLOG_REF
C1770
0.047u B
R1805 820k
R1804
1M
C1769 0.01u B
C1768 0.01u B
R1802
XX
C1767
150p CH
R1801
100k
C1765
22u
4V
TA A
L1753
10uH
R1798
1k
R1797
XX
24 CLOG
23 SP/LP_REF
22 PB_SP/LP
21 CS
20 SIN
19 SCLK
18 D_VDD
17 CLK_5.9M
25 CLOG_REF
26 MOD_RATIO
27 ENV_OUT
28 COMP
29 SP_IN
30 A_VDD
31 PBIN
32 BIAS/GND
16 D_GND
15 V_REF
14 STBY
13 REC_PILOT
12 PILOT_ACT
11 RP_PB_MODE
10 ATF
9 NF
1 TEST
2 BPF160OUT
3 BPF470OUT
4 A_GND
5 REF_PILOT
6 3FH_IN
7 FH_IN
8 3FH-FH
IC120
ATF SERVO
CLOG DETECT
SP/LP DETECT
IC120
XR1083ACQ-E2
53
54
55
56
C1777
0.1u F
1608
ATFSTBY
R1814
0
C1778
XX B
R1813
100k
C1776
4700p
B
R1809
100k
R1810
2200
R1811
2200
C1771
220p
CH
C1772
220p
CH
C1773
0.01u B
C1774
0.01u
B
C1775
0.01u B
R1812
33k
R0.1/P3
R0.2/P1.5
R1.5
P0.3
1.5

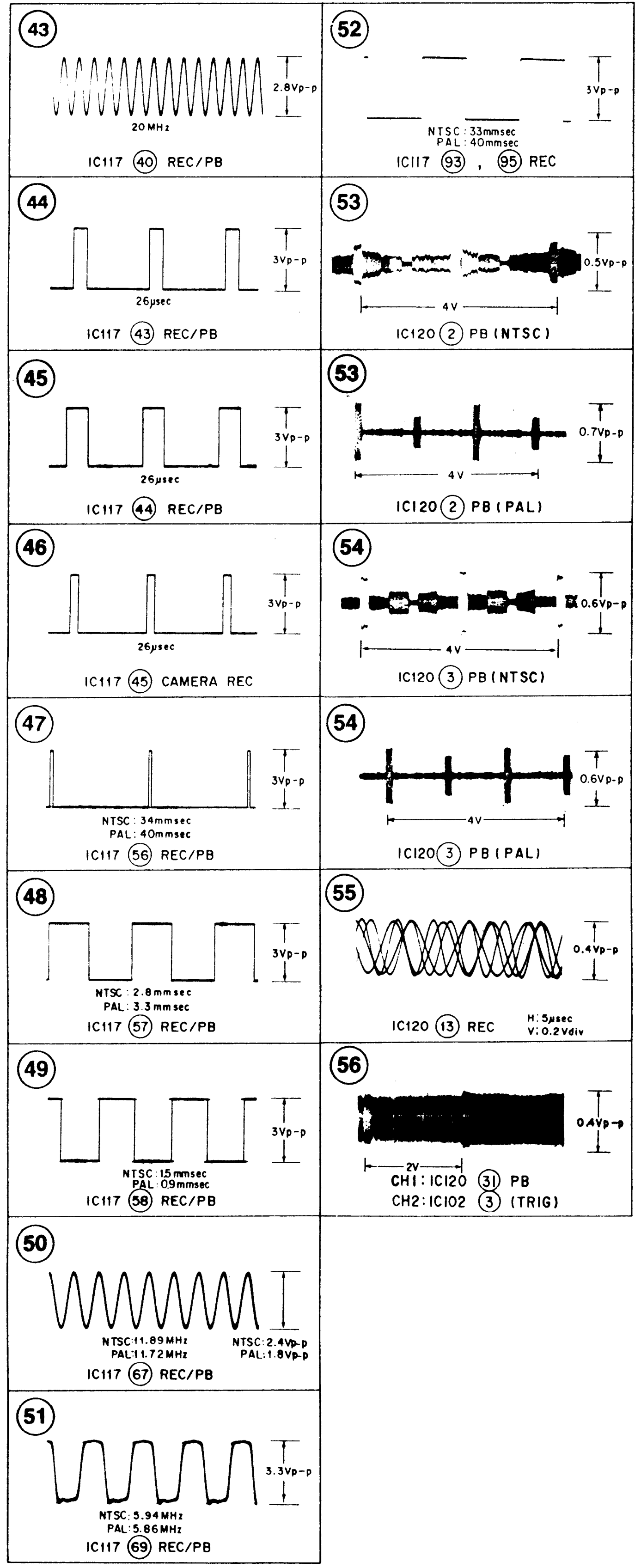
NTSC MODEL:CCD-TR930
TIME CODE MODEL:CCD-TR825E
TYPE A MODEL:CCD-TR930
TYPE B MODEL:CCD-TR820E
TYPE C MODEL:CCD-TR825E
TYPE D MODEL:CCD-TR920E

Model / Ref. No.	TYPE A	TYPE B	TYPE C	TYPE D
R705	68k	XX	100k	100k
R706	56k	0	22k	47k
R1803	4.7k	8.2k	8.2k	8.2k
X1752	11.895MHz	11.719MHz	11.719MHz	11.719MHz

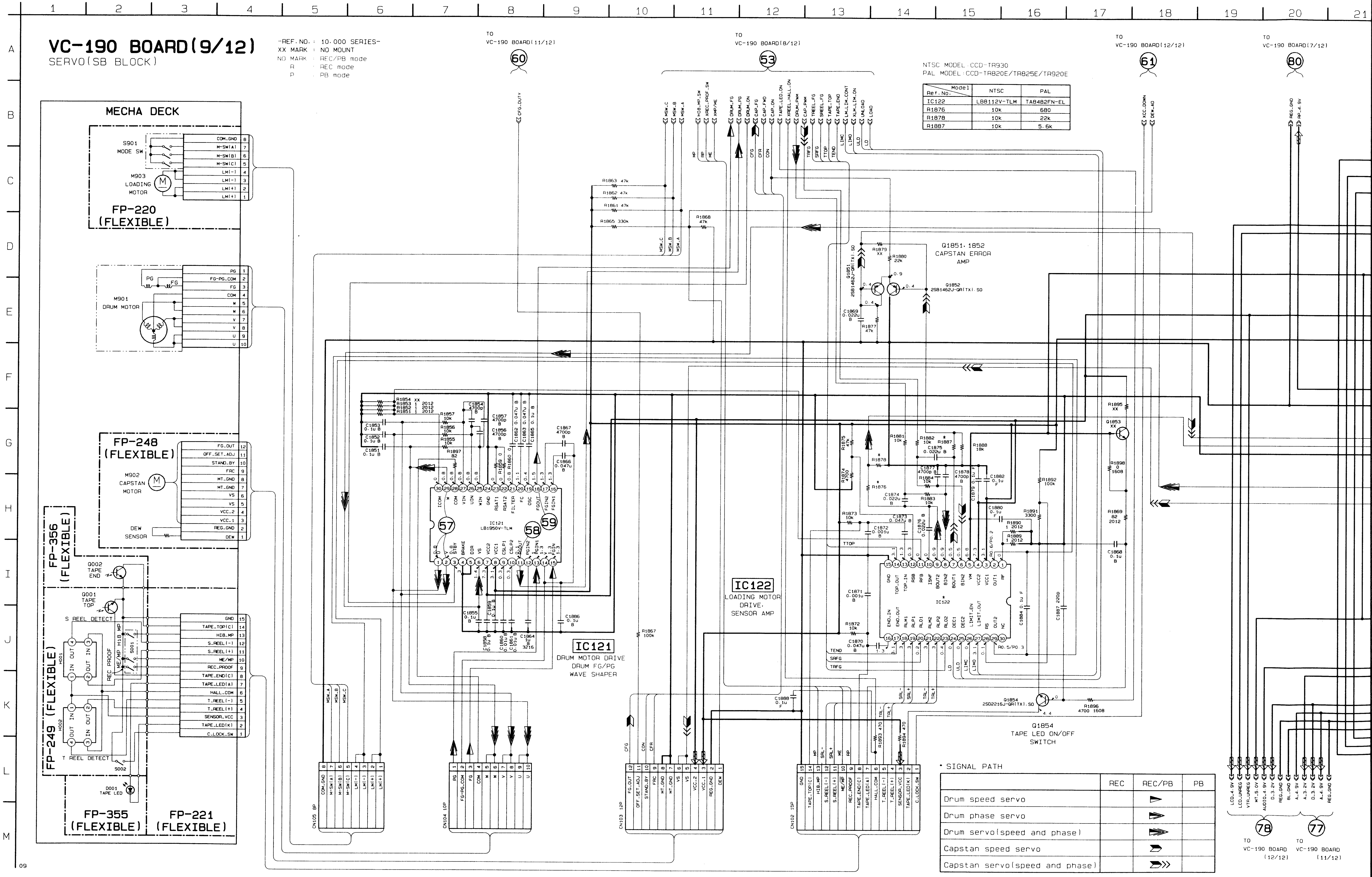
• SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷	
Drum servo(speed and phase)		⋙	
Capstan speed servo		➢	
Capstan servo(speed and phase)		➢»	
Ref. signal	➤		▷

VC-190 BOARD (MC BLOCK)



- **For schematic diagrams.**
- Refer to page 4–15 for Printed Wiring Board.


MECHA DECK
S901 MODE SW
M903 LOADING MOTOR
FP-220 (FLEXIBLE)
M901 DRUM MOTOR
FP-248 (FLEXIBLE)
M902 CAPSTAN MOTOR
DEW SENSOR
FP-356 (FLEXIBLE)
Q002 TAPE END
Q001 TAPE TOP
S REEL DETECT
FP-249 (FLEXIBLE)
T REEL DETECT
D001 TAPE LED
FP-355 (FLEXIBLE)
FP-221 (FLEXIBLE)
TO VC-190 BOARD(11/12)
60
TO VC-190 BOARD(8/12)
53
TO VC-190 BOARD(12/12)
61
TO VC-190 BOARD(7/12)
80
Q1851, 1852 CAPSTAN ERROR AMP
IC121 LB1950V-TLM
57
58
59
IC121 DRUM MOTOR DRIVE DRUM FG/PG WAVE SHAPER
IC122 LOADING MOTOR DRIVE, SENSOR AMP
Q1854 TAPE LED ON/OFF SWITCH
CN105 8P
CN104 10P
CN103 12P
CN102 15P
78
77
TO VC-190 BOARD (12/12)
TO VC-190 BOARD (11/12)

VC-190 BOARD(9/12)

SERVO(SB BLOCK)

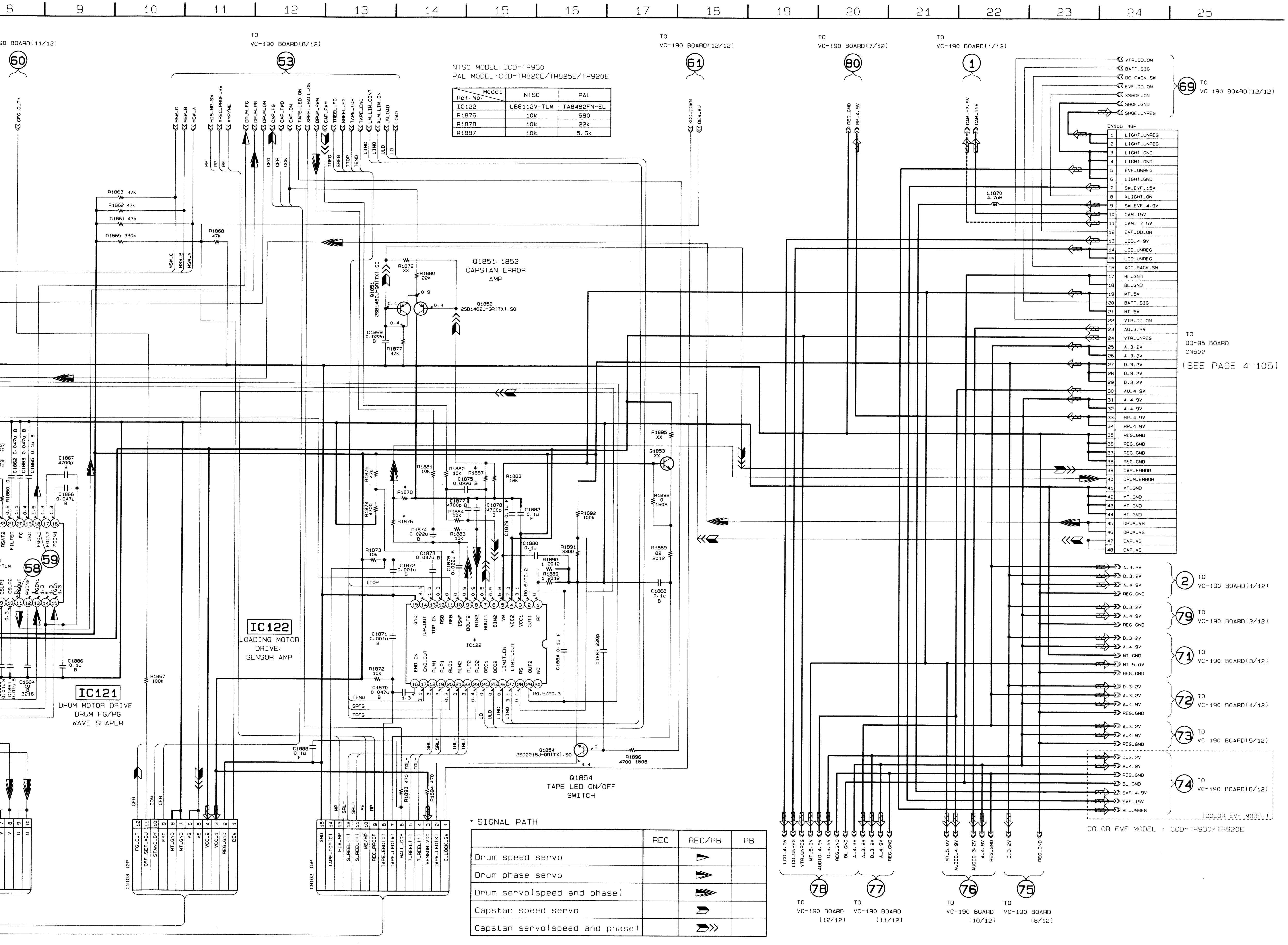
-REF.NO. : 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
R : REC mode
P : PB mode

NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR820E/TR825E/TR920E

Model / Ref.No.	NTSC	PAL
IC122	LB8112V-TLM	TA8482FN-EL
R1876	10k	680
R1878	10k	22k
R1887	10k	5.6k

• SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶>	
Drum servo(speed and phase)		▶>>	
Capstan speed servo		➤	
Capstan servo(speed and phase)		➤>>	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21
22
23
24
25
TO VC-190 BOARD (11/12) 60
TO VC-190 BOARD (8/12) 53
TO VC-190 BOARD (12/12) 61
TO VC-190 BOARD (7/12) 80
TO VC-190 BOARD (1/12) 1
CFG_DUTY
MSW_C
MSW_B
MSW_A
HI8_MP_SW
XREC_PROOF_SW
XMP/ME
DRUM_FG
DRUM_PG
DRUM_ON
CAP_FG
CAP_PWM
CAP_ON
TAPE_LED_ON
XREEL_HALL_ON
DRUM_PWM
CAP_PWM
TREEL_FG
SREEL_FG
TAPE_TOP
TAPE_END
LM_LIM_CONT
XLM_LIM_ON
UNLOAD
LOAD
XCC_DOWN
DEW_AD
REG_GND
RP_4.9V
CAM_-7.5V
CAM_15V
VTR_DD_ON
BATT_SIG
DC_PACK_SW
EVF_DD_ON
XSHOE_ON
SHOE_GND
SHOE_UNREG
69 TO VC-190 BOARD (12/12)
CN106 48P
1 LIGHT_UNREG
2 LIGHT_UNREG
3 LIGHT_GND
4 LIGHT_GND
5 EVF_UNREG
6 LIGHT_GND
7 SW_EVF_15V
8 XLIGHT_ON
9 SW_EVF_4.9V
10 CAM_15V
11 CAM_-7.5V
12 EVF_DD_ON
13 LCD_4.9V
14 LCD_UNREG
15 LCD_UNREG
16 XDC_PACK_SW
17 BL_GND
18 BL_GND
19 MT_5V
20 BATT_SIG
21 MT_5V
22 VTR_DD_ON
23 AU_3.2V
24 VTR_UNREG
25 A_3.2V
26 A_3.2V
27 D_3.2V
28 D_3.2V
29 D_3.2V
30 AU_4.9V
31 A_4.9V
32 A_4.9V
33 RP_4.9V
34 RP_4.9V
35 REG_GND
36 REG_GND
37 REG_GND
38 REG_GND
39 CAP_ERROR
40 DRUM_ERROR
41 MT_GND
42 MT_GND
43 MT_GND
44 MT_GND
45 DRUM_VS
46 DRUM_VS
47 CAP_VS
48 CAP_VS
TO DD-95 BOARD CN502 (SEE PAGE 4-105)
L1870 4.7uH
R1863 47k
R1862 47k
R1861 47k
R1865 330k
R1868 47k
Q1851, 1852 CAPSTAN ERROR AMP
Q1851 2SB1462J-QR(TX).SO
Q1852 2SB1462J-QR(TX).SO
R1879 XX
R1880 22k
C1869 0.022u B
R1877 47k
R1895 XX
Q1853 XX
R1898 0 1608
R1869 82 2012
C1868 0.1u B
R1892 100k
R1891 3300
R1890 1 2012
R1889 1 2012
C1880 0.1u
R1881 10k
R1882 10k
R1887
R1888 18k
C1875 0.022u B
C1877 4700p B
R1884 10k
C1878 4700p B
C1882 0.1u F
C1879
R1875 47k
R1878
R1874 4700
R1876
C1874 0.022u B
R1883 10k
R1873 10k
C1873 0.047u B
C1876 0.022u B
C1872 0.001u B
C1871 0.001u B
R1872 10k
C1870 0.047u B
C1884 0.1u F
C1887 220p
IC122 LOADING MOTOR DRIVE, SENSOR AMP
IC122
TTOP
TEND
SRFG
TRFG
Q1854 2SD2216J-QR(TX).SO
R1896 4700 1608
Q1854 TAPE LED ON/OFF SWITCH
C1888 0.1u F
R1893 470
R1894 470
C1867 4700p B
C1866 0.047u B
C1862 0.047u B
C1863 0.047u B
C1865 0.1u B
R1860
C1886 0.1u B
C1864 1u 3216
R1867 100k
IC121 DRUM MOTOR DRIVE DRUM FG/PG WAVE SHAPER
CN103 12P
12 FG_OUT
11 OFF_SET_ADJ
10 STAND_BY
9 FRC
8 MT_GND
7 MT_GND
6 VS
5 VS
4 VCC_2
3 VCC_1
2 REG_GND
1 DEW
CN102 15P
15 GND
14 TAPE_TOP(C)
13 HI8_MP
12 S_REEL(-)
11 S_REEL(+)
10 ME/MP
9 REC_PROOF
8 TAPE_END(C)
7 TAPE_END(A)
6 HALL_COM
5 T_REEL(-)
4 T_REEL(+)
3 SENSOR_VCC
2 TAPE_LED(K)
1 C_LOCK_SW
A_3.2V
D_3.2V
A_4.9V
REG_GND
2 TO VC-190 BOARD (1/12)
79 TO VC-190 BOARD (2/12)
MT_GND
MT_5.0V
71 TO VC-190 BOARD (3/12)
72 TO VC-190 BOARD (4/12)
73 TO VC-190 BOARD (5/12)
BL_GND
EVF_4.9V
EVF_15V
BL_UNREG
74 TO VC-190 BOARD (6/12)
(COLOR EVF MODEL)
COLOR EVF MODEL : CCD-TR930/TR920E
LCD_4.9V
LCD_UNREG
VTR_UNREG
MT_5.0V
AUDIO_4.9V
78 TO VC-190 BOARD (12/12)
77 TO VC-190 BOARD (11/12)
AUDIO_3.2V
76 TO VC-190 BOARD (10/12)
75 TO VC-190 BOARD (8/12)

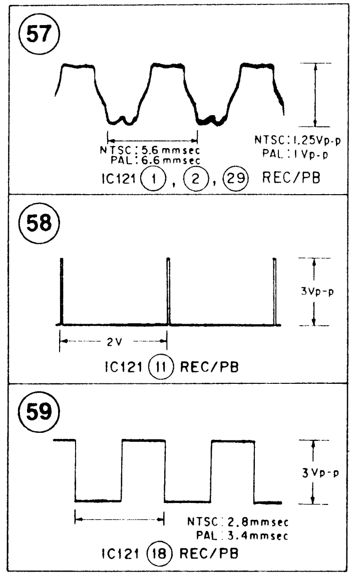
NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR820E/TR825E/TR920E

Ref. No. / Model	NTSC	PAL
IC122	LB8112V-TLM	TA8482FN-EL
R1876	10k	680
R1878	10k	22k
R1887	10k	5.6k

• SIGNAL PATH

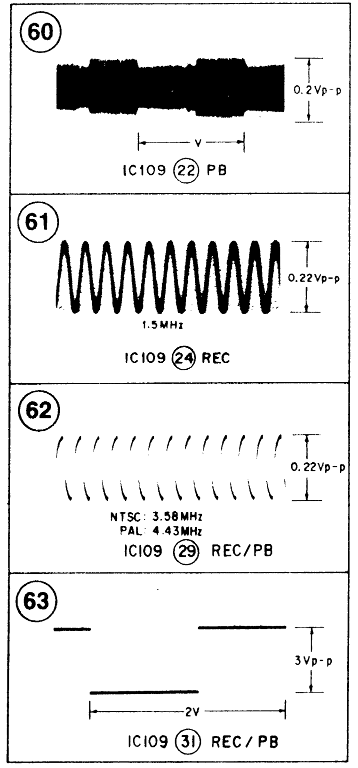
	REC	REC/PB	PB
Drum speed servo		▻	
Drum phase servo		➤	
Drum servo (speed and phase)		⋙	
Capstan speed servo		▷	
Capstan servo (speed and phase)		▷»	

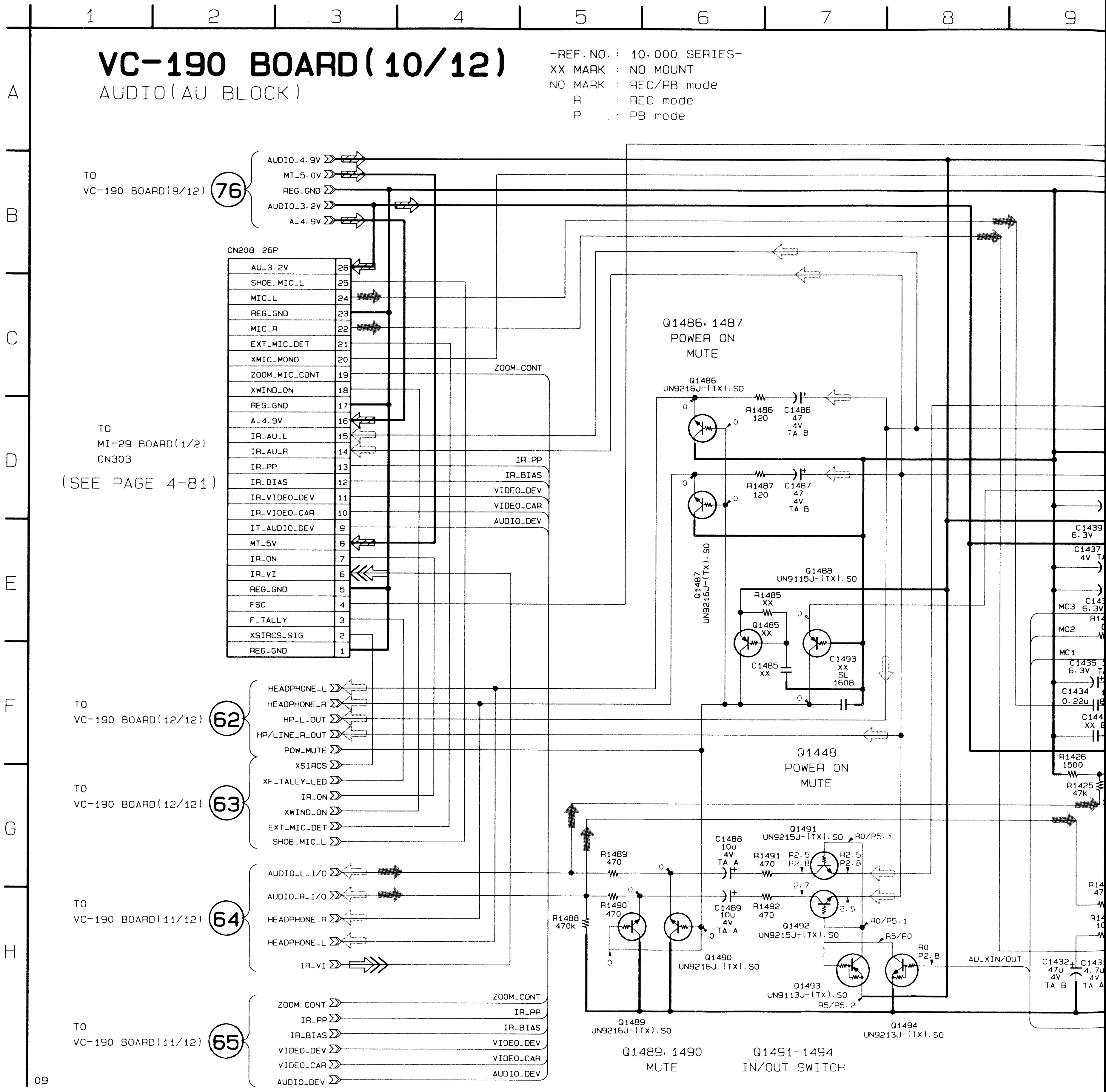
VC-190 BOARD (SB BLOCK)


57
NTSC : 5.6 mmsec
PAL : 6.6 mmsec
NTSC : 1.25Vp-p
PAL : 1Vp-p
IC121 ①, ②, ㉙ REC/PB
58
2V
3Vp-p
IC121 ⑪ REC/PB
59
3Vp-p
NTSC : 2.8mmsec
PAL : 3.4mmsec
IC121 ⑱ REC/PB

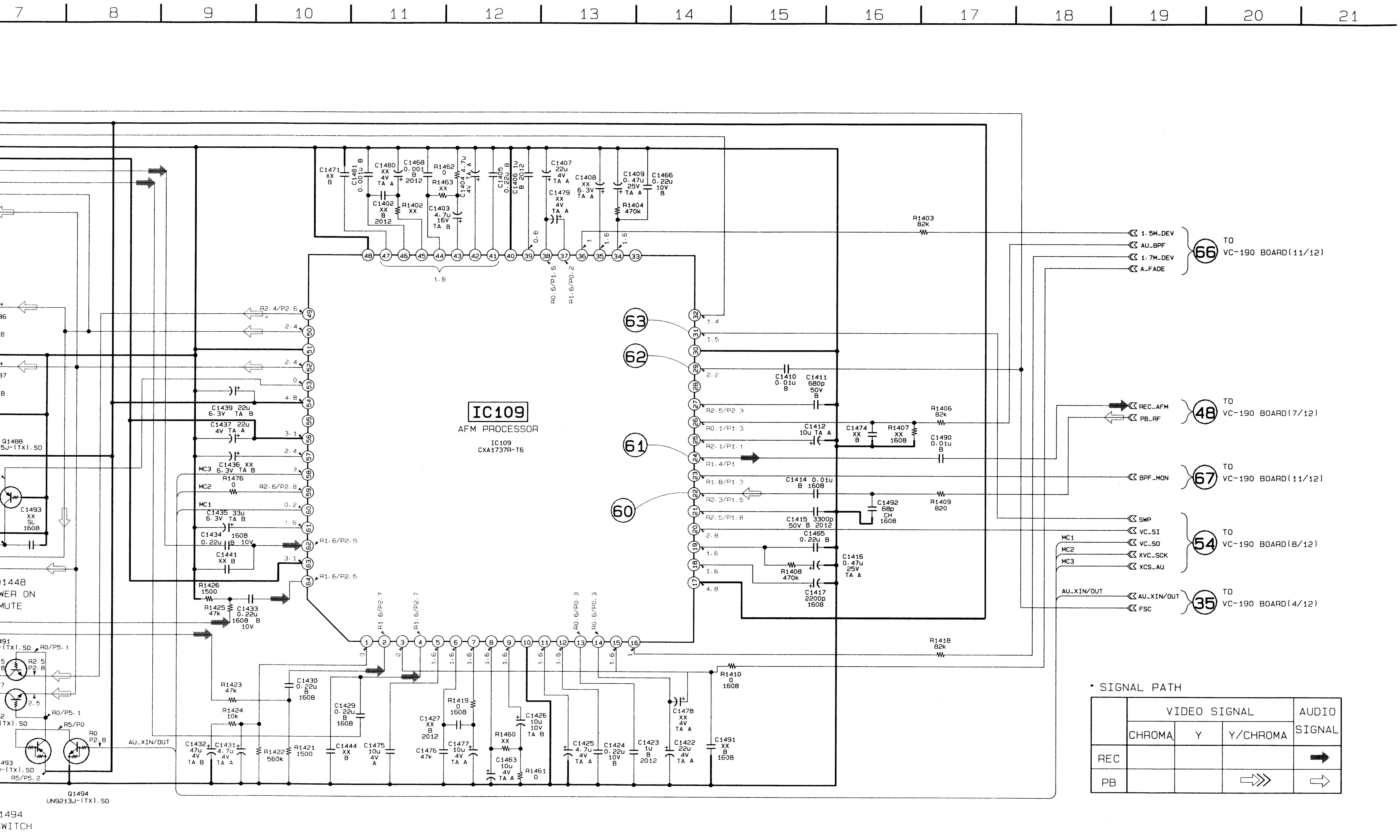
- **For schematic diagrams.**
- Refer to page 4–15 for Printed Wiring Board.

VC-190 BOARD (AU BLOCK)





1 2 3 4 5 6 7 8 9
A B C D E F G H
VC-190 BOARD(10/12)
AUDIO(AU BLOCK)
-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
R : REC mode
P : PB mode
TO VC-190 BOARD(9/12) 76
AUDIO_4.9V
MT_5.0V
REG_GND
AUDIO_3.2V
A_4.9V
CN208 26P
AU_3.2V 26
SHOE_MIC_L 25
MIC_L 24
REG_GND 23
MIC_R 22
EXT_MIC_DET 21
XMIC_MONO 20
ZOOM_MIC_CONT 19
XWIND_ON 18
REG_GND 17
A_4.9V 16
IR_AU_L 15
IR_AU_R 14
IR_PP 13
IR_BIAS 12
IR_VIDEO_DEV 11
IR_VIDEO_CAR 10
IT_AUDIO_DEV 9
MT_5V 8
IR_ON 7
IR_VI 6
REG_GND 5
FSC 4
F_TALLY 3
XSIRCS_SIG 2
REG_GND 1
TO MI-29 BOARD(1/2) CN303
(SEE PAGE 4-81)
ZOOM_CONT
IR_PP
IR_BIAS
VIDEO_DEV
VIDEO_CAR
AUDIO_DEV
TO VC-190 BOARD(12/12) 62
HEADPHONE_L
HEADPHONE_R
HP_L_OUT
HP/LINE_R_OUT
POW_MUTE
XSIRCS
TO VC-190 BOARD(12/12) 63
XF_TALLY_LED
IR_ON
XWIND_ON
EXT_MIC_DET
SHOE_MIC_L
TO VC-190 BOARD(11/12) 64
AUDIO_L_I/O
AUDIO_R_I/O
HEADPHONE_R
HEADPHONE_L
IR_VI
TO VC-190 BOARD(11/12) 65
ZOOM_CONT
IR_PP
IR_BIAS
VIDEO_DEV
VIDEO_CAR
AUDIO_DEV
Q1486, 1487
POWER ON
MUTE
Q1486
UN9216J-(TX).SO
R1486 120
C1486 47 4V TA B
R1487 120
C1487 47 4V TA B
Q1487 UN9216J-(TX).SO
Q1488 UN9115J-(TX).SO
R1485 XX
Q1485 XX
C1485 XX
C1493 XX SL 1608
Q1448
POWER ON
MUTE
Q1491
UN9215J-(TX).SO
R0/P5.1
C1488 10u 4V TA A
R1491 470
R2.5 P2.8
R2.5 P2.8
2.7
2.5
R1489 470
R1490 470
R1488 470k
C1489 10u 4V TA A
R1492 470
Q1492 UN9215J-(TX).SO
R0/P5.1
R5/P0
R0 P2.8
Q1490 UN9216J-(TX).SO
Q1493 UN9113J-(TX).SO
R5/P5.2
Q1489 UN9216J-(TX).SO
Q1494 UN9213J-(TX).SO
Q1489, 1490
MUTE
Q1491-1494
IN/OUT SWITCH
AU_XIN/OUT
C1439 6.3V
C1437 4V
MC3 6.3V
MC2
MC1
C1435 6.3V
C1434 0.22u
XX
R1426 1500
R1425 47k
C1432 47u 4V TA B
4.7u 4V
09


7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
IC109
AFM PROCESSOR
IC109
CXA1737R-T6
63
62
61
60
1.5M_DEV
AU_BPF
1.7M_DEV
A_FADE
66
TO
VC-190 BOARD(11/12)
REC_AFM
PB_RF
48
TO
VC-190 BOARD(7/12)
BPF_MON
67
TO
VC-190 BOARD(11/12)
SWP
VC_SI
VC_SO
XVC_SCK
XCS_AU
54
TO
VC-190 BOARD(8/12)
AU_XIN/OUT
FSC
35
TO
VC-190 BOARD(4/12)
MC1
MC2
MC3
AU_XIN/OUT
C1471 XX B
C1481 0.001u B
C1480 XX 4V TA A
C1468 0.001 B 2012
R1462 0
R1463 XX
C1404 4.7u 4V TA A
C1405 0.22u B
C1406 1u B 2012
C1407 22u 4V TA A
C1479 XX 4V TA A
C1408 XX 6.3V TA A
C1409 0.47u 25V TA A
C1466 0.22u 10V B
R1404 470k
C1402 XX B 2012
R1402 XX
C1403 4.7u 16V TA B
R1403 82k
C1410 0.01u B
C1411 680p 50V B
R1406 82k
C1412 10u TA A
C1474 XX B
R1407 XX 1608
C1490 0.01u B
C1414 0.01u B 1608
C1492 68p CH 1608
R1409 820
C1415 3300p 50V B 2012
C1465 0.22u B
C1416 0.47u 25V TA A
R1408 470k
C1417 2200p 1608
R1418 82k
R1410 0 1608
C1439 22u 6.3V TA B
C1437 22u 4V TA A
C1436 XX 6.3V TA B
R1476 0
C1435 33u 6.3V TA B
C1434 0.22u 1608 B 10V
C1441 XX B
R1426 1500
R1425 47k
C1433 0.22u 1608 B 10V
R1423 47k
R1424 10k
C1430 0.22u B 1608
C1429 0.22u B 1608
C1432 47u 4V TA B
C1431 4.7u 4V TA A
R1422 560k
R1421 1500
C1444 XX B
C1475 10u 4V A
C1427 XX B 2012
C1476 47k
R1419 0 1608
C1477 10u 4V TA A
R1460 XX
C1463 10u 4V TA A
C1426 10u 10V TA B
R1461 0
C1425 4.7u 4V TA A
C1424 0.22u 10V B
C1423 1u B 2012
C1478 XX 4V TA A
C1422 22u 4V TA A
C1491 XX B 1608
Q1488
C1493 XX SL 1608
Q1494 UN9213J-(TX).SO
1448
WER ON
MUTE
1494
WITCH
R0/P5.1
R5/P0
R5/P5.2
R2.4/P2.6
R1.6/P2.5
R0.6/P1.6
R1.6/P0.2
R1.6/P2.7
R0.6/P0.3
R2.5/P2.3
R0.1/P1.3
R2.1/P1.1
R1.4/P1
R1.8/P1.3
R2.3/P1.5
R2.5/P1.8

• SIGNAL PATH

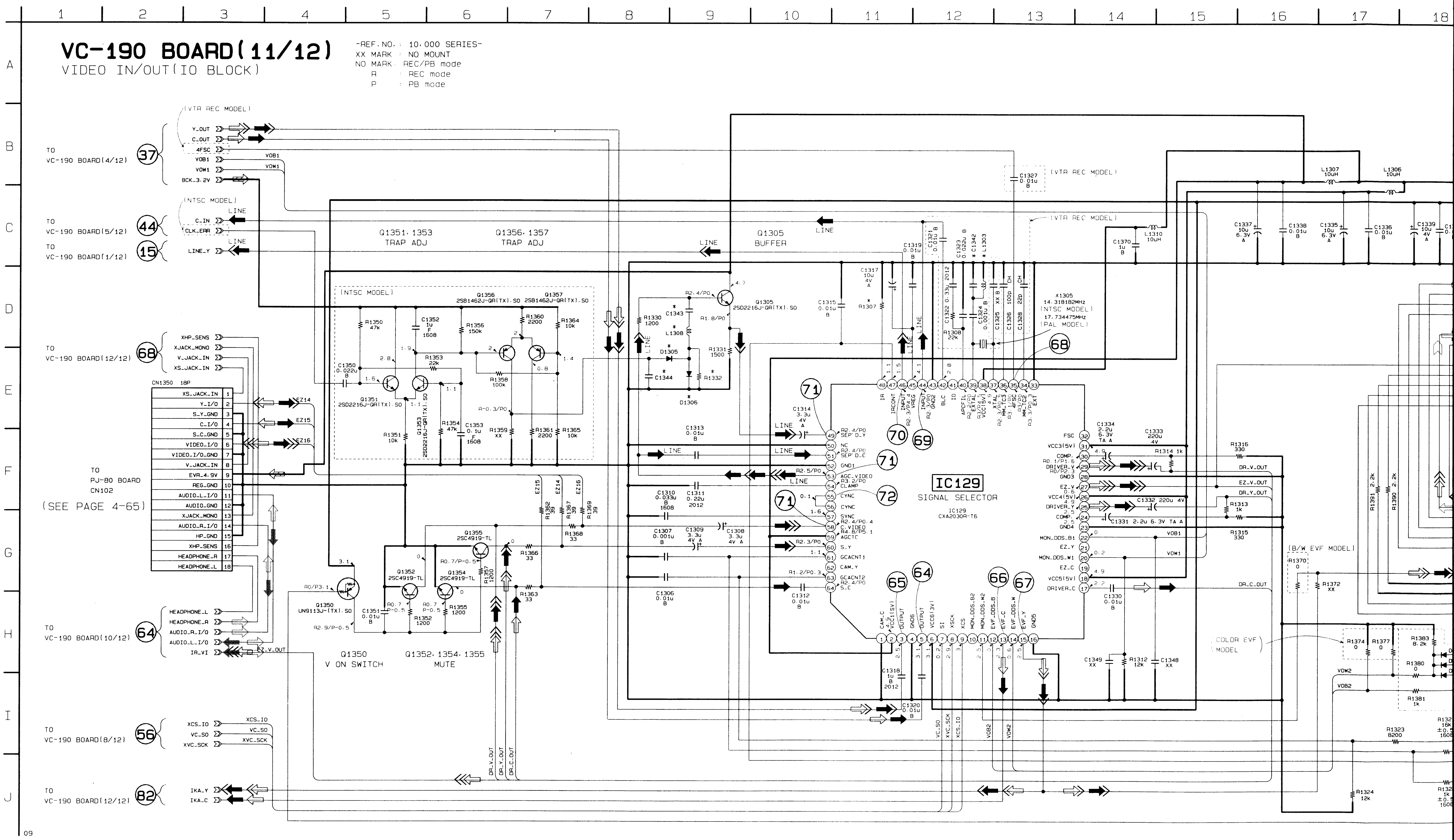
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB			⇨⟫	⇨

- **For schematic diagrams.**
- Refer to page 4-15 for Printed Wiring Board.

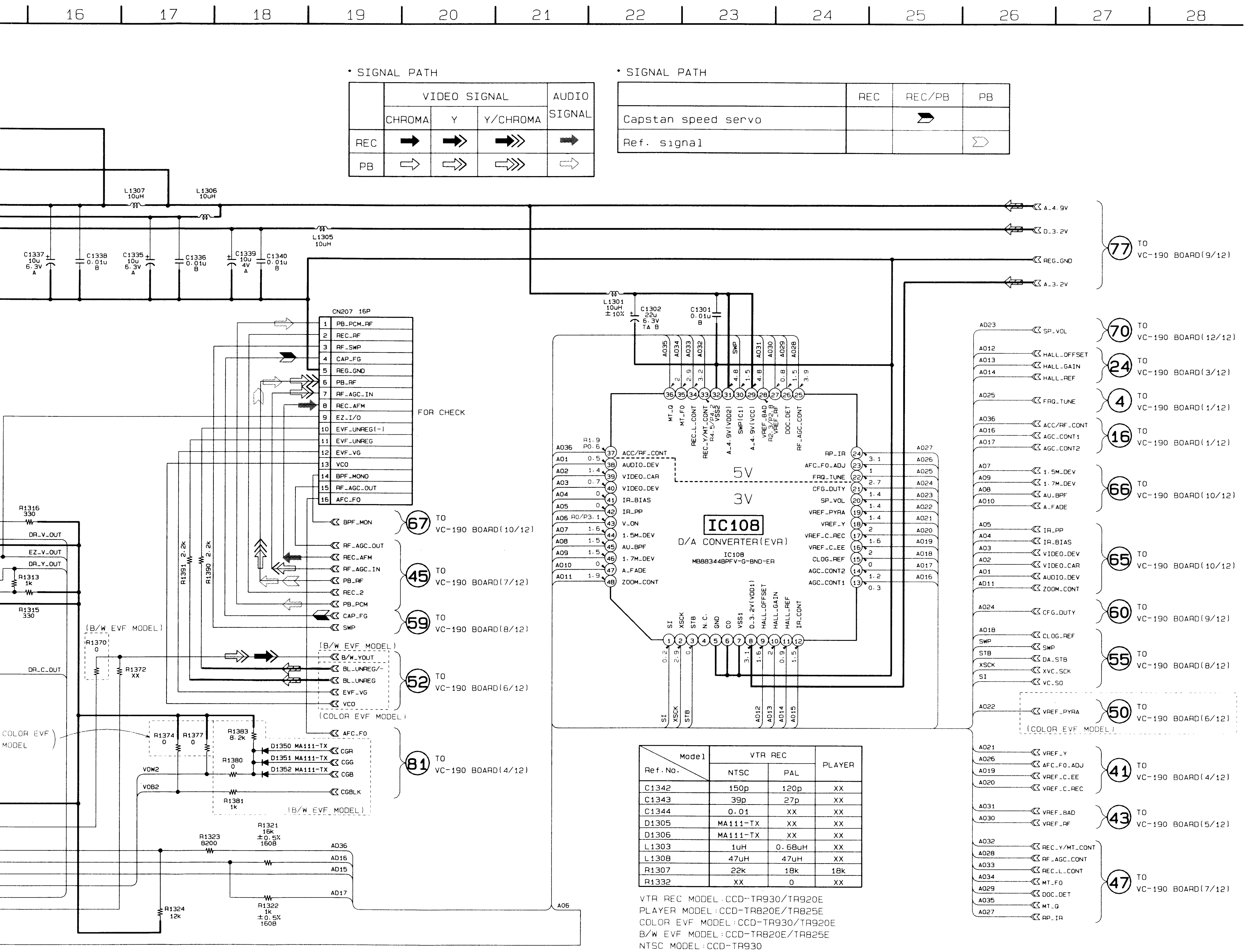
VC-190 BOARD(11/12)

VIDEO IN/OUT(IO BLOCK)

-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
R : REC mode
P : PB mode



(VTR REC MODEL)
Y_OUT
C_OUT
4FSC
VOB1
VOW1
BCK_3.2V
TO VC-190 BOARD(4/12)
37
(NTSC MODEL)
LINE
C_IN
CLK_ERR
TO VC-190 BOARD(5/12)
44
TO VC-190 BOARD(1/12)
15
LINE_Y
XHP_SENS
XJACK_MONO
V_JACK_IN
XS_JACK_IN
TO VC-190 BOARD(12/12)
68
CN1350 18P
XS_JACK_IN
Y_I/O
S_Y_GND
C_I/O
S_C_GND
VIDEO_I/O
VIDEO_I/O_GND
V_JACK_IN
EVR_4.9V
REG_GND
AUDIO_L_I/O
AUDIO_GND
XJACK_MONO
AUDIO_R_I/O
HP_GND
XHP_SENS
HEADPHONE_R
HEADPHONE_L
TO PJ-80 BOARD CN102
(SEE PAGE 4-65)
EZ14
EZ15
EZ16
HEADPHONE_L
HEADPHONE_R
AUDIO_R_I/O
AUDIO_L_I/O
IR_VI
EZ_V_OUT
TO VC-190 BOARD(10/12)
64
XCS_IO
VC_SO
XVC_SCK
TO VC-190 BOARD(8/12)
56
IKA_Y
IKA_C
TO VC-190 BOARD(12/12)
82
Q1351, 1353 TRAP ADJ
Q1356, 1357 TRAP ADJ
Q1305 BUFFER
Q1350 V ON SWITCH
Q1352, 1354, 1355 MUTE
Q1356 2SB1462J-QR(TX).SO
Q1357 2SB1462J-QR(TX).SO
Q1351 2SD2216J-QR(TX).SO
Q1353 2SD2216J-QR(TX).SO
Q1305 2SD2216J-QR(TX).SO
Q1350 UN9113J-(TX).SO
Q1352 2SC4919-TL
Q1354 2SC4919-TL
Q1355 2SC4919-TL
R1350 47k
C1352 1u F 1608
R1356 150k
R1360 2200
R1364 10k
R1353 22k
R1358 100k
C1350 0.022u B
R1351 10k
R1354 47k
C1353 0.1u F 1608
R1359 XX
R1361 2200
R1365 10k
R1362 39
R1367 39
R1369 39
R1368 33
R1366 33
R1363 33
R1357 1200
C1351 0.01u B
R1352 1200
R1355 1200
R1330 1200
C1343
L1308
D1305
C1344
D1306
R1331 1500
R1332
R1307
C1315 0.01u B
C1317 10u 4V A
C1319 0.01u B
C1321 0.01u B
C1323 0.022u B
C1342
L1303
C1322 0.33u 2012
C1324 0.001u B
C1325 XX B
C1326 100p CH
C1328 22p CH
R1308 22k
X1305 14.31818 2MHz (NTSC MODEL) 17.734475MHz (PAL MODEL)
C1327 0.01u B
(VTR REC MODEL)
C1370 1u B
L1310 10uH
L1307 10uH
L1306 10uH
C1337 10u 6.3V A
C1338 0.01u B
C1335 10u 6.3V A
C1336 0.01u B
C1339 10u 4V A
C1313 0.01u B
C1314 3.3u 4V A
C1310 0.033u B 1608
C1311 0.22u 2012
C1307 0.001u B
C1309 3.3u 4V A
C1308 3.3u 4V A
C1306 0.01u B
C1312 0.01u B
C1318 1u B 2012
C1320 0.01u B
IC129 SIGNAL SELECTOR
IC129 CXA2030R-T6
SEP'D_Y
NC
SEP'D_C
GND1
AGC_VIDEO
CLAMP
CYNC
SYNC
C_VIDEO
AGCIC
S_Y
GCACNT1
CAM_Y
GCACNT2
S_C
IR
IRCONT
INPUT_V
INPUT_C
GND2
BLC
IO
APCFIL
EXTAL
VCC(5V)
XTAL
HM_YC3
4FSC
HM_YC2
EXT
FSC
VCC3(5V)
COMP
DRIVER_V
GND3
EZ_Y
VCC4(5V)
DRIVER_Y
COMP
GND4
MON_DDS_B1
MON_DDS_W1
EZ_Y
EZ_C
VCC5(5V)
DRIVER_C
CAM_C
VCC1(5V)
OUTPUT
GND6
OUTPUT
VCC6(3V)
SI
XSCK
XCS
MON_DDS_B2
MON_DDS_W2
EVF_DDS_B
EVF_C
EVF_DDS_W
EVF_Y
GND5
C1334 2.2u 6.3V TA A
C1333 220u 4V
R1314 1k
C1332 220u 4V
C1331 2.2u 6.3V TA A
C1330 0.01u B
C1349 XX
R1312 12k
C1348 XX
R1316 330
DR_V_OUT
EZ_V_OUT
DR_Y_OUT
R1313 1k
R1315 330
DR_C_OUT
VOB1
VOW1
(B/W EVF MODEL)
R1370 0
R1372 XX
COLOR EVF MODEL
R1374 0
R1377 0
R1383 8.2k
R1380 0
R1381 1k
R1391 2.2k
R1390 2.2k
VOW2
VOB2
R1323 8200
R1324 12k
DR_V_OUT
DR_Y_OUT
DR_C_OUT
VC_SO
XVC_SCK
XCS_IO
70
69
71
72
65
66
67


16
17
18
19
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21
22
23
24
25
26
27
28
L1307 10uH
L1306 10uH
L1305 10uH
C1337 10u 6.3V A
C1338 0.01u B
C1335 10u 6.3V A
C1336 0.01u B
C1339 10u 4V A
C1340 0.01u B
CN207 16P
1 PB_PCM_RF
2 REC_RF
3 RF_SWP
4 CAP_FG
5 REG_GND
6 PB_RF
7 RF_AGC_IN
8 REC_AFM
9 EZ_I/O
10 EVF_UNREG(-)
11 EVF_UNREG
12 EVF_VG
13 VCO
14 BPF_MONO
15 RF_AGC_OUT
16 AFC_FO
FOR CHECK
L1301 10uH ±10%
C1302 22u 6.3V TA B
C1301 0.01u B
IC108
D/A CONVERTER(EVR)
IC108 MB88344BPFV-G-BND-ER
5V
3V
A_4.9V
D_3.2V
REG_GND
A_3.2V
77 TO VC-190 BOARD(9/12)
SP_VOL
70 TO VC-190 BOARD(12/12)
HALL_OFFSET
HALL_GAIN
HALL_REF
24 TO VC-190 BOARD(3/12)
FRQ_TUNE
4 TO VC-190 BOARD(1/12)
ACC/RF_CONT
AGC_CONT1
AGC_CONT2
16 TO VC-190 BOARD(1/12)
1.5M_DEV
1.7M_DEV
AU_BPF
A_FADE
66 TO VC-190 BOARD(10/12)
IR_PP
IR_BIAS
VIDEO_DEV
VIDEO_CAR
AUDIO_DEV
ZOOM_CONT
65 TO VC-190 BOARD(10/12)
CFG_DUTY
60 TO VC-190 BOARD(9/12)
CLOG_REF
SWP
DA_STB
XVC_SCK
VC_SO
55 TO VC-190 BOARD(8/12)
VREF_PYRA
(COLOR EVF MODEL)
50 TO VC-190 BOARD(6/12)
VREF_Y
AFC_FO_ADJ
VREF_C_EE
VREF_C_REC
41 TO VC-190 BOARD(4/12)
VREF_BAD
VREF_RF
43 TO VC-190 BOARD(5/12)
REC_Y/MT_CONT
RF_AGC_CONT
REC_L_CONT
MT_FO
DOC_DET
MT_Q
RP_IR
47 TO VC-190 BOARD(7/12)
BPF_MON
67 TO VC-190 BOARD(10/12)
RF_AGC_OUT
REC_AFM
RF_AGC_IN
PB_RF
REC_2
45 TO VC-190 BOARD(7/12)
PB_PCM
CAP_FG
SWP
59 TO VC-190 BOARD(8/12)
(B/W EVF MODEL)
B/W_YOUT
BL_UNREG/-
BL_UNREG
EVF_VG
VCO
(COLOR EVF MODEL)
52 TO VC-190 BOARD(6/12)
AFC_FO
CGR
CGG
CGB
CGBLK
81 TO VC-190 BOARD(4/12)
(B/W EVF MODEL)
R1316 330
DR_V_OUT
EZ_V_OUT
DR_Y_OUT
R1313 1k
R1315 330
R1391 2.2k
R1390 2.2k
[B/W EVF MODEL]
R1370 0
R1372 XX
DR_C_OUT
COLOR EVF MODEL
R1374 0
R1377 0
R1383 8.2k
R1380 0
D1350 MA111-TX
D1351 MA111-TX
D1352 MA111-TX
VOW2
VOB2
R1381 1k
R1323 8200
R1321 16k ±0.5% 1608
R1324 12k
R1322 1k ±0.5% 1608
AO36
AO16
AO15
AO17
AO6

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

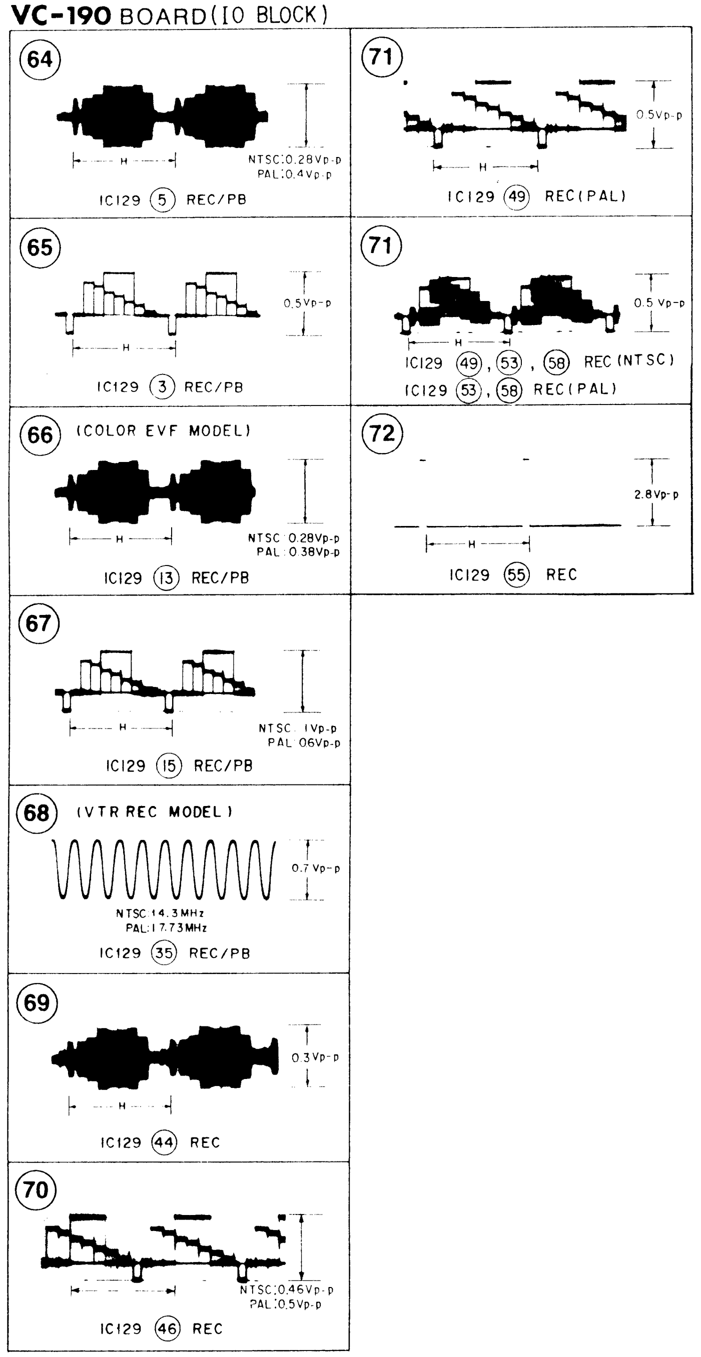
• SIGNAL PATH

	REC	REC/PB	PB
Capstan speed servo		➡	
Ref. signal			⇨

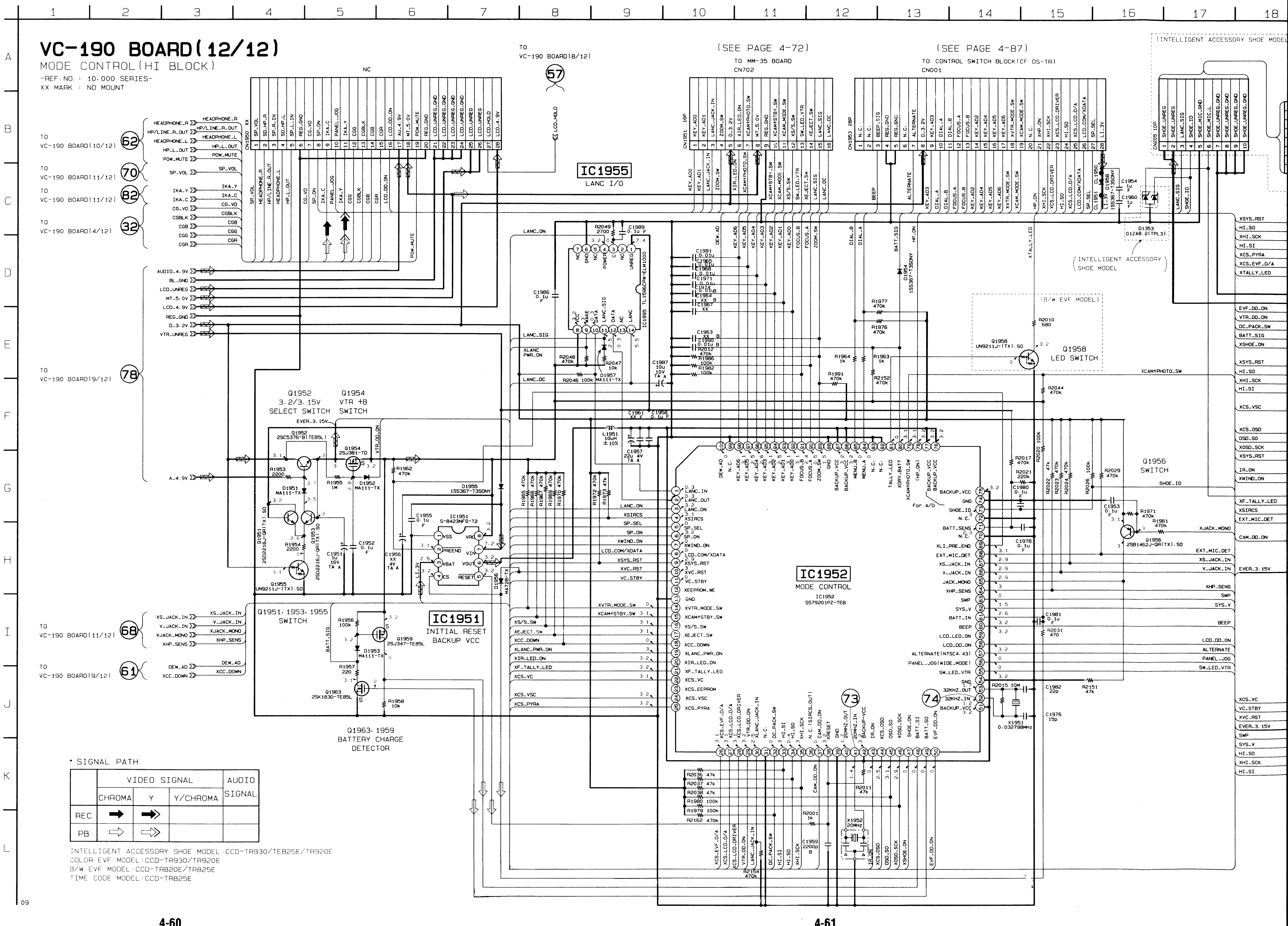
Model / Ref. No.	VTR REC		PLAYER
	NTSC	PAL	
C1342	150p	120p	XX
C1343	39p	27p	XX
C1344	0.01	XX	XX
D1305	MA111-TX	XX	XX
D1306	MA111-TX	XX	XX
L1303	1uH	0.68uH	XX
L1308	47uH	47uH	XX
R1307	22k	18k	18k
R1332	XX	0	XX

VTR REC MODEL · CCD-TR930/TR920E
PLAYER MODEL : CCD-TR820E/TR825E
COLOR EVF MODEL : CCD-TR930/TR920E
B/W EVF MODEL : CCD-TR820E/TR825E
NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR820E/TR825E/TR920E

VC-190 BOARD(IO BLOCK)



- **For schematic diagrams.**
- Refer to page 4–15 for Printed Wiring Board.

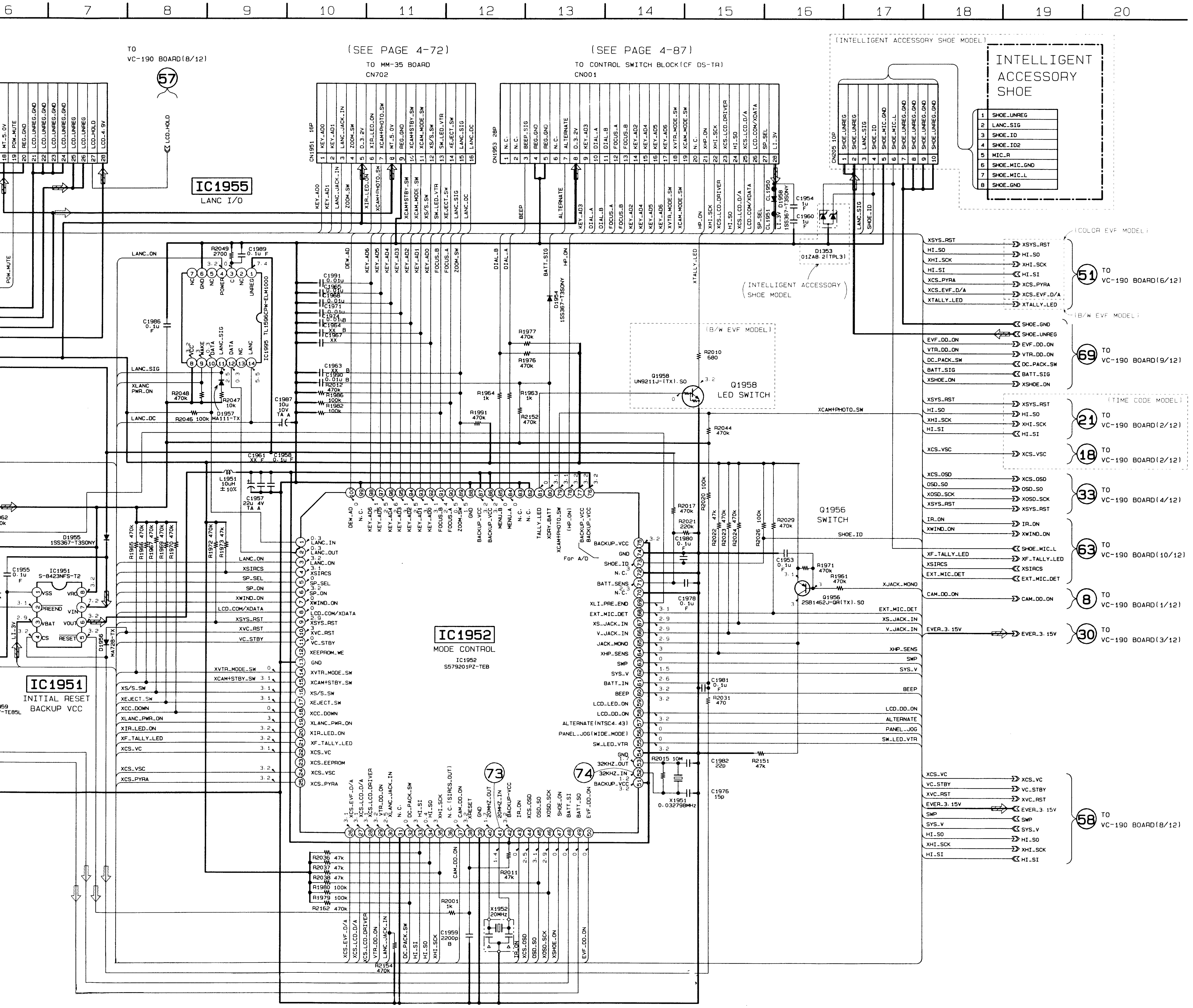

VC-190 BOARD(12/12)
MODE CONTROL(HI BLOCK)
-REF.NO. : 10,000 SERIES-
XX MARK : NO MOUNT
TO VC-190 BOARD(10/12) 62
TO VC-190 BOARD(11/12) 70
TO VC-190 BOARD(11/12) 82
TO VC-190 BOARD(4/12) 32
TO VC-190 BOARD(9/12) 78
TO VC-190 BOARD(11/12) 68
TO VC-190 BOARD(9/12) 61
TO VC-190 BOARD(8/12) 57
CN1950 XX
(SEE PAGE 4-72) TO MM-35 BOARD CN702
CN1951 16P
(SEE PAGE 4-87) TO CONTROL SWITCH BLOCK(CF OS-TA) CN001
CN1953 28P
(INTELLIGENT ACCESSORY SHOE MODEL)
CN205 10P
IC1955 LANC I/O
IC1955 TL1596CPW-ELM1000
IC1952 MODE CONTROL
IC1952 S579201PZ-TEB
IC1951 INITIAL RESET BACKUP VCC
IC1951 S-8423NFS-T2
Q1952 3.2/3.15V SELECT SWITCH
Q1954 VTR +B SWITCH
Q1952 2SC5376-B(TE85L)
Q1954 2SJ381-TD
Q1951, 1953, 1955 SWITCH
Q1955 UN9211J-(TX).SO
Q1963, 1959 BATTERY CHARGE DETECTOR
Q1959 2SJ347-TE85L
Q1963 2SK1830-TE85L
Q1958 LED SWITCH
Q1958 UN9211J-(TX).SO
(B/W EVF MODEL)
Q1956 SWITCH
Q1956 2SB1462J-QR(TX).SO
D1353 01ZA8.2(TPL3)
X1951 0.032798MHz
X1952 20MHz
73
74

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➾		
PB	⇨	⇒		

INTELLIGENT ACCESSORY SHOE MODEL : CCD-TR930/TE825E/TR920E
COLOR EVF MODEL : CCD-TR930/TR920E
B/W EVF MODEL : CCD-TR820E/TR825E
TIME CODE MODEL : CCD-TR825E

09



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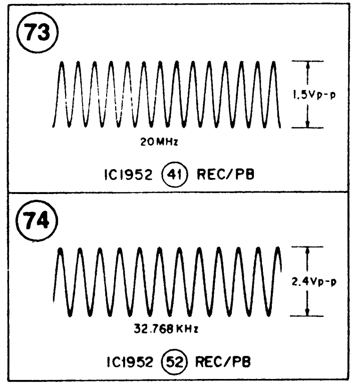
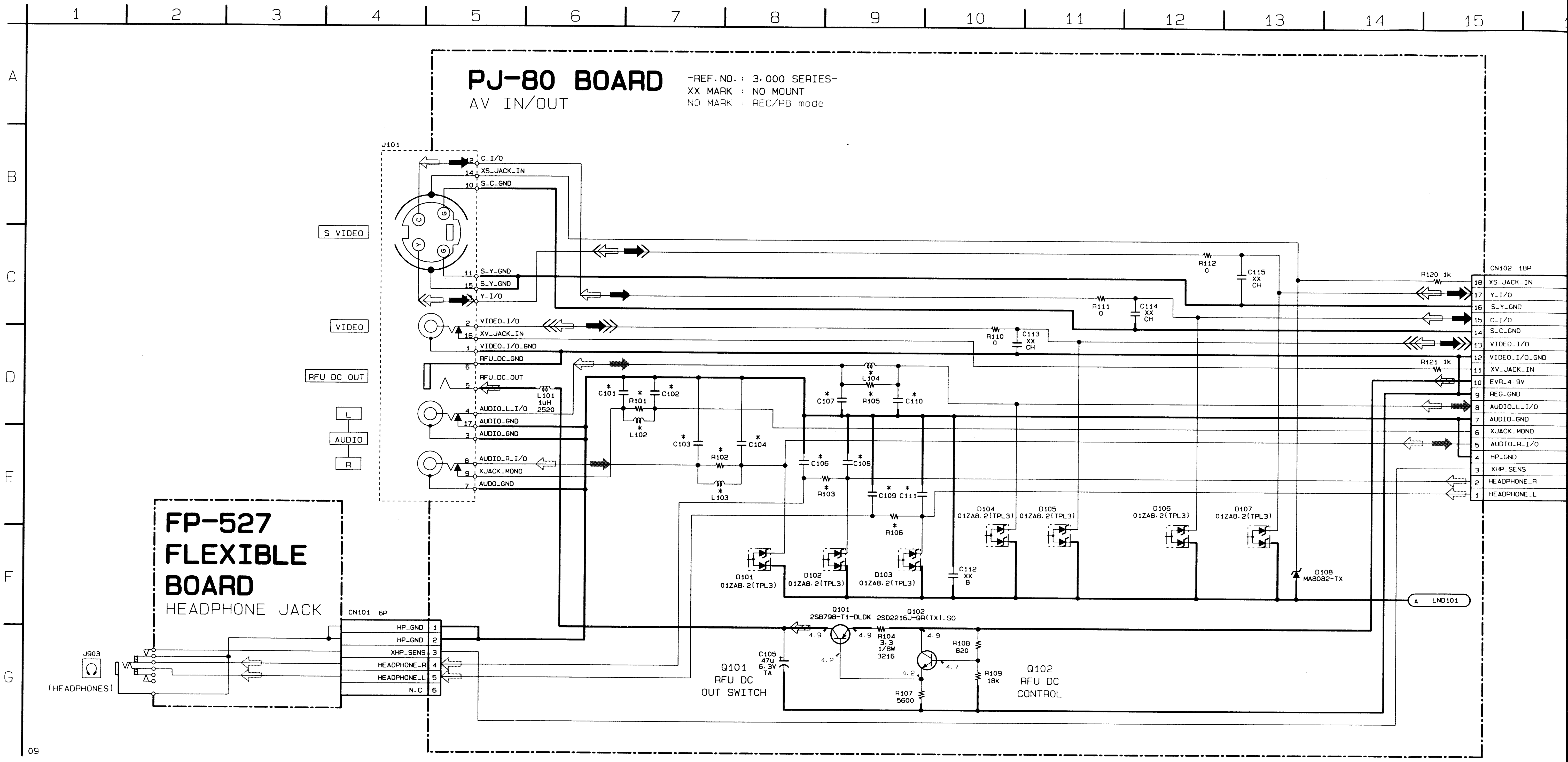
20
TO VC-190 BOARD(8/12)
57
(SEE PAGE 4-72)
TO MM-35 BOARD
CN702
(SEE PAGE 4-87)
TO CONTROL SWITCH BLOCK(CF DS-TR)
CN001
(INTELLIGENT ACCESSORY SHOE MODEL)
INTELLIGENT ACCESSORY SHOE
SHOE_UNREG
LANC_SIG
SHOE_ID
SHOE_ID2
MIC_R
SHOE_MIC_GND
SHOE_MIC_L
SHOE_GND
CN1951 16P
CN1953 28P
CN205 10P
IC1955
LANC I/O
IC1995 TL1596CPW-ELM1000
Q1958 LED SWITCH
Q1958 UN9211J-(TX).SO
(B/W EVF MODEL)
(COLOR EVF MODEL)
(TIME CODE MODEL)
(INTELLIGENT ACCESSORY SHOE MODEL)
D1353 01ZA8.2(TPL3)
D1954 1SS367-T3SONY
D1955 1SS367-T3SONY
D1957 MA111-TX
D1956 MA728-TX
Q1956 SWITCH
Q1956 2SB1462J-QR(TX).SO
IC1951 S-8423NFS-T2
IC1951
INITIAL RESET
BACKUP VCC
IC1952
MODE CONTROL
IC1952
S579201PZ-TEB
X1951 0.032798MHz
X1952 20MHz
73
74
51 TO VC-190 BOARD(6/12)
69 TO VC-190 BOARD(9/12)
21 TO VC-190 BOARD(2/12)
18 TO VC-190 BOARD(2/12)
33 TO VC-190 BOARD(4/12)
63 TO VC-190 BOARD(10/12)
8 TO VC-190 BOARD(1/12)
30 TO VC-190 BOARD(3/12)
58 TO VC-190 BOARD(8/12)
XSYS_RST
HI_SO
XHI_SCK
HI_SI
XCS_PYRA
XCS_EVF_D/A
XTALLY_LED
SHOE_GND
SHOE_UNREG
EVF_DD_ON
VTR_DD_ON
DC_PACK_SW
BATT_SIG
XSHOE_ON
XCS_VSC
XCS_OSD
OSD_SO
XOSD_SCK
IR_ON
XWIND_ON
SHOE_MIC_L
XF_TALLY_LED
XSIRCS
EXT_MIC_DET
CAM_DD_ON
EVER_3.15V
XCS_VC
VC_STBY
XVC_RST
SWP
SYS_V

VC-190 BOARD (HI BLOCK)

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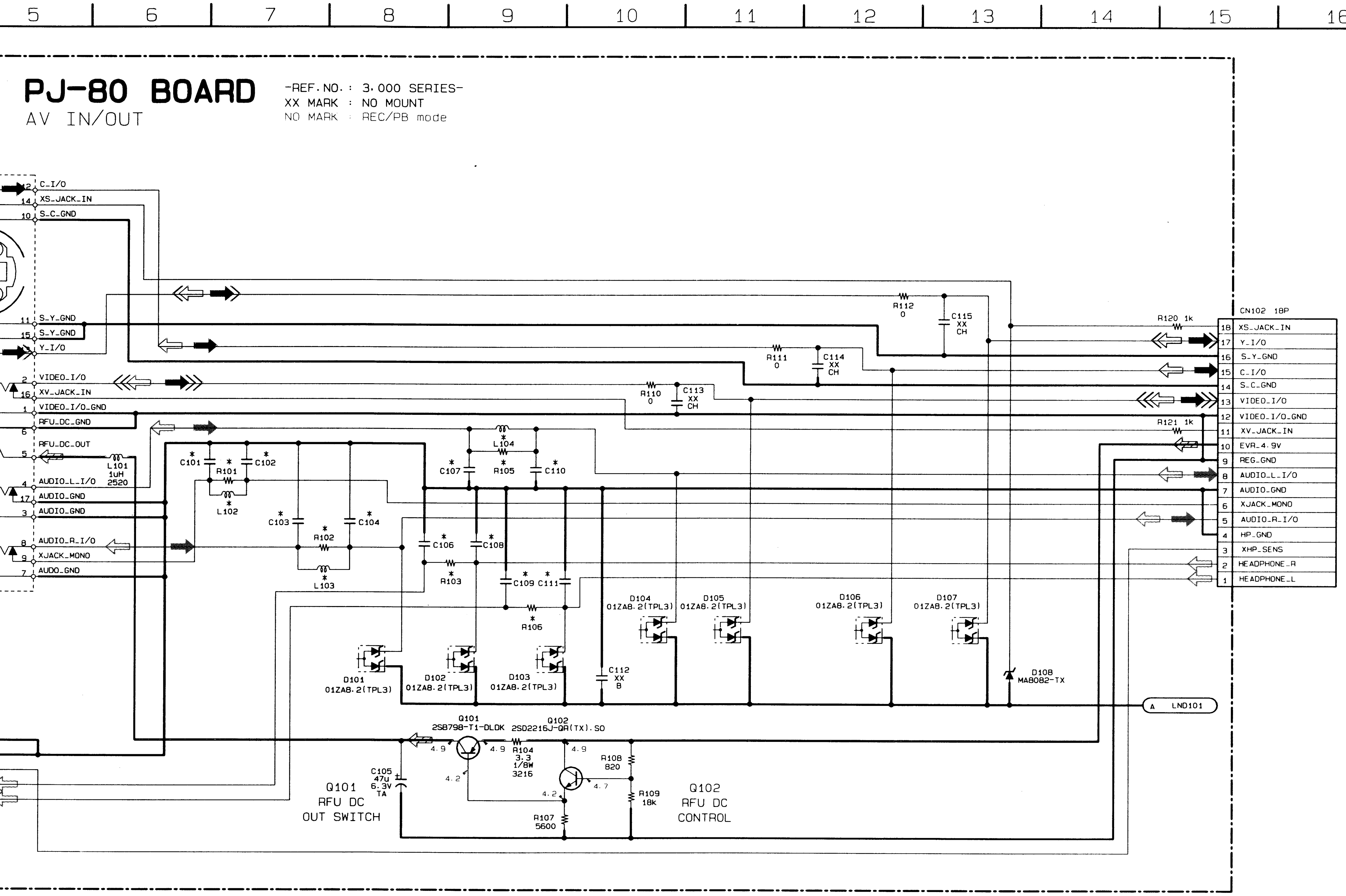
13
14
15
A
B
C
D
E
F
G
PJ-80 BOARD
AV IN/OUT
-REF.NO. : 3.000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
J101
12 C_I/O
14 XS_JACK_IN
10 S_C_GND
11 S_Y_GND
15 S_Y_GND
13 Y_I/O
2 VIDEO_I/O
16 XV_JACK_IN
1 VIDEO_I/O_GND
RFU_DC_GND
6
5 RFU_DC_OUT
4 AUDIO_L_I/O
17 AUDIO_GND
3 AUDIO_GND
8 AUDIO_R_I/O
9 XJACK_MONO
7 AUDO_GND
C
G
Y
G
S VIDEO
VIDEO
RFU DC OUT
L
AUDIO
R
L101
1uH
2520
C101
R101
C102
L102
C103
R102
C104
L103
C106
R103
C107
L104
R105
C110
C108
C109
C111
R106
C112
XX
B
R110
0
C113
XX
CH
R111
0
C114
XX
CH
R112
0
C115
XX
CH
R120 1k
R121 1k
D101
01ZA8.2(TPL3)
D102
01ZA8.2(TPL3)
D103
01ZA8.2(TPL3)
D104
01ZA8.2(TPL3)
D105
01ZA8.2(TPL3)
D106
01ZA8.2(TPL3)
D107
01ZA8.2(TPL3)
D108
MA8082-TX
A LND101
Q101
2SB798-T1-DLDK
Q102
2SD2216J-QR(TX).SO
4.9
4.9
R104
3.3
1/8W
3216
4.9
4.2
4.7
4.2
C105
47u
6.3V
TA
R108
820
R109
18k
R107
5600
Q101
RFU DC
OUT SWITCH
Q102
RFU DC
CONTROL
CN102 18P
18 XS_JACK_IN
17 Y_I/O
16 S_Y_GND
15 C_I/O
14 S_C_GND
13 VIDEO_I/O
12 VIDEO_I/O_GND
11 XV_JACK_IN
10 EVR_4.9V
9 REG_GND
8 AUDIO_L_I/O
7 AUDIO_GND
6 XJACK_MONO
5 AUDIO_R_I/O
4 HP_GND
3 XHP_SENS
2 HEADPHONE_R
1 HEADPHONE_L
FP-527
FLEXIBLE
BOARD
HEADPHONE JACK
CN101 6P
HP_GND 1
HP_GND 2
XHP_SENS 3
HEADPHONE_R 4
HEADPHONE_L 5
N.C 6
J903
(HEADPHONES)
09

PJ-80 BOARD
AV IN/OUT

-REF. NO. : 3,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode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10
11
12
13
14
15
16
17
18
19
12 C_I/O
14 XS_JACK_IN
10 S_C_GND
11 S_Y_GND
15 S_Y_GND
13 Y_I/O
2 VIDEO_I/O
16 XV_JACK_IN
1 VIDEO_I/O_GND
RFU_DC_GND
6
RFU_DC_OUT
5
L101
1uH
2520
4 AUDIO_L_I/O
17 AUDIO_GND
3 AUDIO_GND
8 AUDIO_R_I/O
9 XJACK_MONO
7 AUDO_GND
C101
R101
C102
L102
C103
R102
C104
L103
C106
R103
C108
C107
L104
R105
C110
C109
C111
R106
D101
01ZA8.2(TPL3)
D102
01ZA8.2(TPL3)
D103
01ZA8.2(TPL3)
C112
XX
B
D104
01ZA8.2(TPL3)
D105
01ZA8.2(TPL3)
D106
01ZA8.2(TPL3)
D107
01ZA8.2(TPL3)
D108
MA8082-TX
R110
0
C113
XX
CH
R111
0
C114
XX
CH
R112
0
C115
XX
CH
R120 1k
R121 1k
A LND101
Q101
2SB798-T1-DLDK
Q102
2SD2216J-QR(TX).SO
4.9
4.9
4.2
R104
3.3
1/8W
3216
4.9
R108
820
4.7
4.2
R109
18k
R107
5600
C105
47u
6.3V
TA
Q101
RFU DC
OUT SWITCH
Q102
RFU DC
CONTROL
CN102 18P
18 XS_JACK_IN
17 Y_I/O
16 S_Y_GND
15 C_I/O
14 S_C_GND
13 VIDEO_I/O
12 VIDEO_I/O_GND
11 XV_JACK_IN
10 EVR_4.9V
9 REG_GND
8 AUDIO_L_I/O
7 AUDIO_GND
6 XJACK_MONO
5 AUDIO_R_I/O
4 HP_GND
3 XHP_SENS
2 HEADPHONE_R
1 HEADPHONE_L

TO
VC-190 BOARD(11/12)
CN1350
(SEE PAGE 4-55)

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

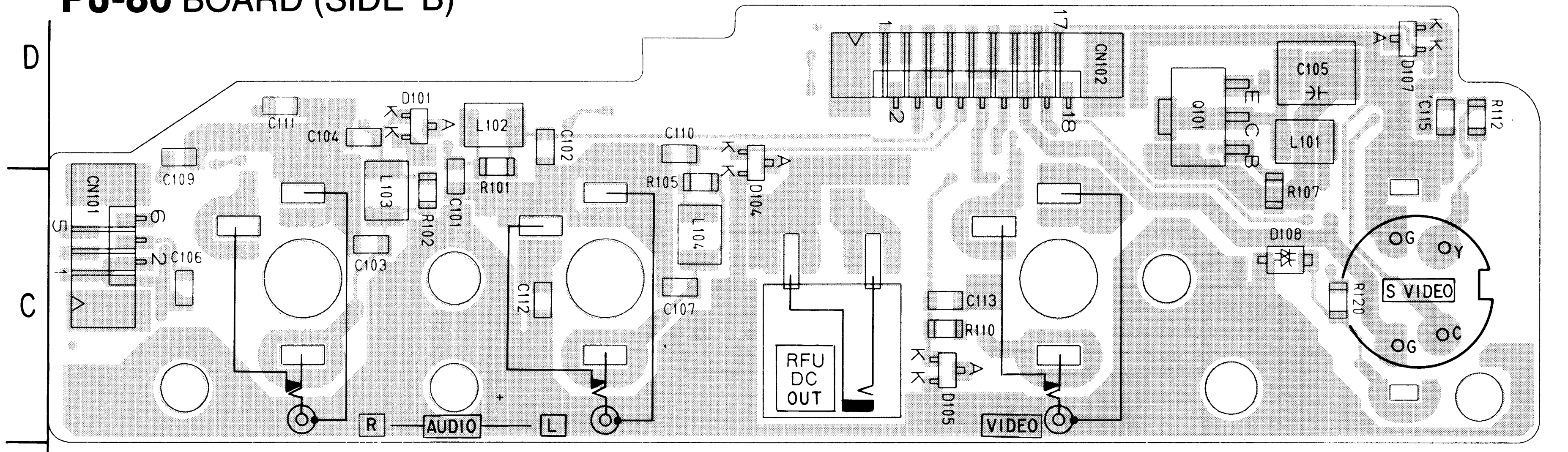
Model / Ref. No.	TYPE A	TYPE B	TYPE C	TYPE D
C101	XX	0.001	0.001	XX
C102	XX	0.001	0.001	XX
C103	XX	0.001	0.001	XX
C104	XX	0.001	0.001	XX
C106	0.001	0.001	0.001	XX
C107	XX	0.001	0.001	XX
C108	0.001	0.001	0.001	XX
C109	0.001	0.001	0.001	XX
C110	XX	0.001	0.001	XX
C111	0.001	0.001	0.001	XX
L102	XX	100uH	100uH	XX
L103	XX	100uH	100uH	XX
L104	XX	100uH	100uH	XX
R101	0	XX	XX	0
R102	0	XX	XX	0
R103	100uH	100uH	100uH	0
R105	0	XX	XX	0
R106	100uH	100uH	100uH	0

TYPE A MODEL:CCD-TR930
TYPE B MODEL:CCD-TR820E
TYPE C MODEL:CCD-TR825E
TYPE D MODEL:CCD-TR920E

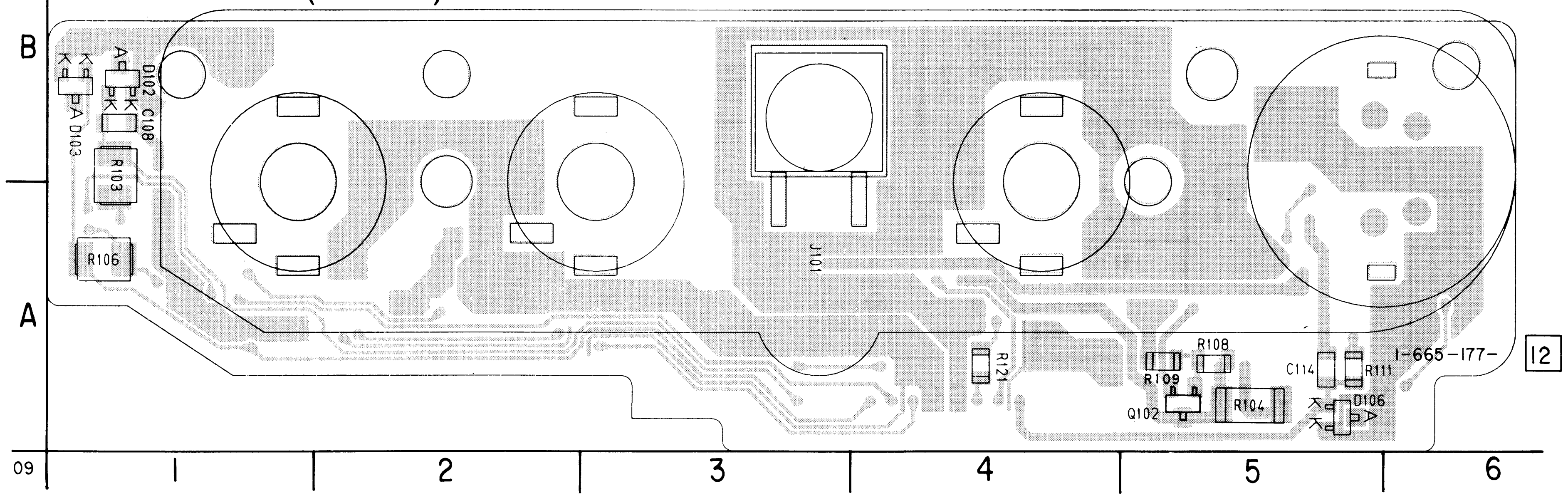
PJ-80 (AV IN/OUT) PRINTED WIRING BOARD

– Ref No. PJ-80 BOARD: 3,000 series –

PJ-80 BOARD (SIDE B)


D
C
CN101
C109
C111
C104
D101
L102
C102
L103
R101
C101
R102
C103
C106
C112
C110
R105
D104
L104
C107
RFU
DC
OUT
C113
R110
D105
CN102
1
17
2
18
Q101
C105
L101
R107
D108
D107
C115
R112
R120
S VIDEO
R
AUDIO
L
VIDEO

PJ-80 BOARD (SIDE A)

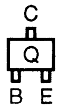

B
A
D102
C108
D103
R103
R106
J101
R121
R108
R109
Q102
R104
C114
R111
D106
1-665-177-
12
09
1
2
3
4
5
6

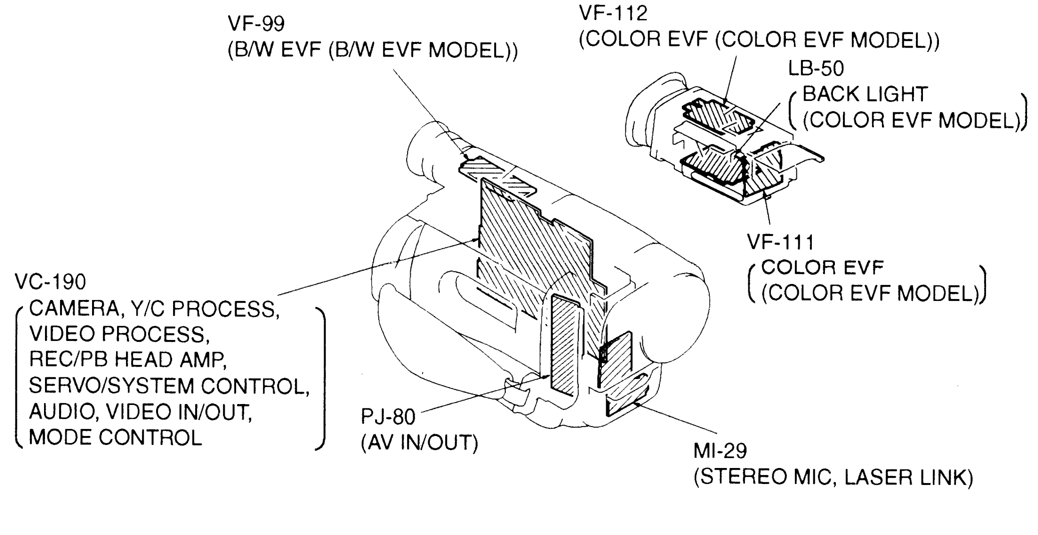
PJ-80 BOARD	
C101	C-2
C102	D-2
C103	C-2
C104	D-2
C105	D-5
C106	C-1
C107	C-3
C109	D-1
C110	D-3
C111	D-1
C112	C-2
C113	C-4
C114	A-5
C115	D-6
CN101	C-1
CN102	D-4
D101	D-2
D104	D-3
D105	C-4
D106	A-5
D107	D-6
D108	C-5
J101	A-1
L101	D-5
L102	D-2
L103	C-2
L104	C-3
Q101	D-5
Q102	A-5
R101	D-2
R102	C-2
R104	A-5
R105	C-3
R106	A-1
R107	C-5
R108	A-5
R109	A-5
R110	C-4
R111	A-5
R112	D-6
R120	C-5
R121	A-4

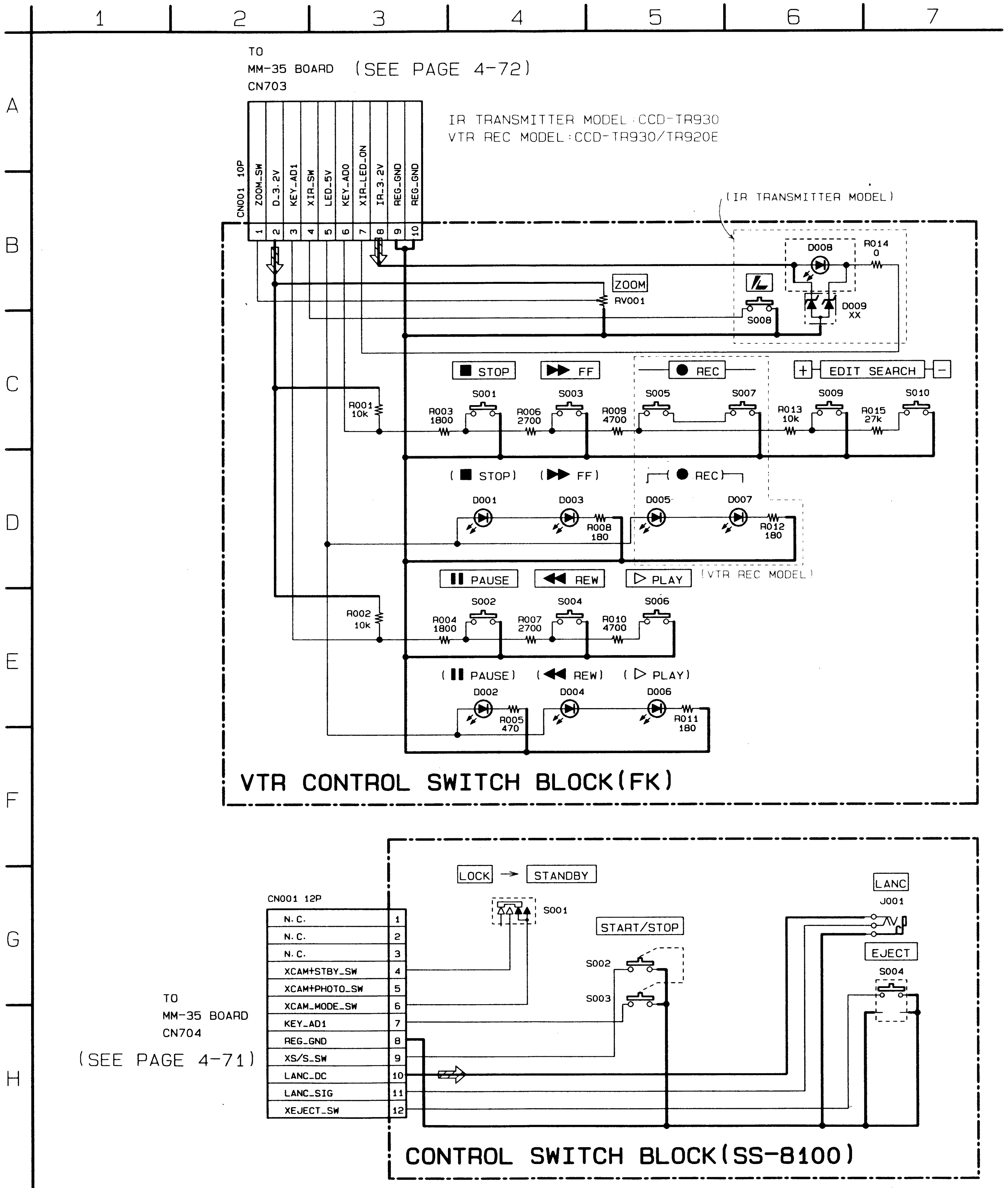
- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor




VF-99
(B/W EVF (B/W EVF MODEL))
VF-112
(COLOR EVF (COLOR EVF MODEL))
LB-50
(BACK LIGHT
(COLOR EVF MODEL))
VF-111
(COLOR EVF
(COLOR EVF MODEL))
VC-190
(CAMERA, Y/C PROCESS,
VIDEO PROCESS,
REC/PB HEAD AMP,
SERVO/SYSTEM CONTROL,
AUDIO, VIDEO IN/OUT,
MODE CONTROL)
PJ-80
(AV IN/OUT)
MI-29
(STEREO MIC, LASER LINK)


1
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A
B
C
D
E
F
G
H
TO
MM-35 BOARD (SEE PAGE 4-72)
CN703
IR TRANSMITTER MODEL : CCD-TR930
VTR REC MODEL : CCD-TR930/TR920E
CN001 10P
1 ZOOM_SW
2 D_3.2V
3 KEY_AD1
4 XIR_SW
5 LED_5V
6 KEY_AD0
7 XIR_LED_ON
8 IR_3.2V
9 REG_GND
10 REG_GND
(IR TRANSMITTER MODEL)
D008
R014
0
ZOOM
RV001
S008
D009
XX
STOP
FF
REC
+
EDIT SEARCH
−
S001
S003
S005
S007
S009
S010
R001
10k
R003
1800
R006
2700
R009
4700
R013
10k
R015
27k
(STOP)
(FF)
(REC)
D001
D003
D005
D007
R008
180
R012
180
PAUSE
REW
PLAY
(VTR REC MODEL)
S002
S004
S006
R002
10k
R004
1800
R007
2700
R010
4700
(PAUSE)
(REW)
(PLAY)
D002
D004
D006
R005
470
R011
180
VTR CONTROL SWITCH BLOCK(FK)
CN001 12P
1 N.C.
2 N.C.
3 N.C.
4 XCAM+STBY_SW
5 XCAM+PHOTO_SW
6 XCAM_MODE_SW
7 KEY_AD1
8 REG_GND
9 XS/S_SW
10 LANC_DC
11 LANC_SIG
12 XEJECT_SW
TO
MM-35 BOARD
CN704
(SEE PAGE 4-71)
LOCK → STANDBY
S001
START/STOP
S002
S003
LANC
J001
EJECT
S004
CONTROL SWITCH BLOCK(SS-8100)

• CONTROL SWITCH BLOCK(FK·SS-8100) are replaced as a block.
so that this PRINTED WIRING BOARD is omitted. But J001 and S004 are supplied.

09

TIME CODE, CONTROL SWITCH BLOCK
MM-35 FK, SS-8100

MM-35 BOARD

TIME CODE

-REF.NO.: 2,000 SERIES-

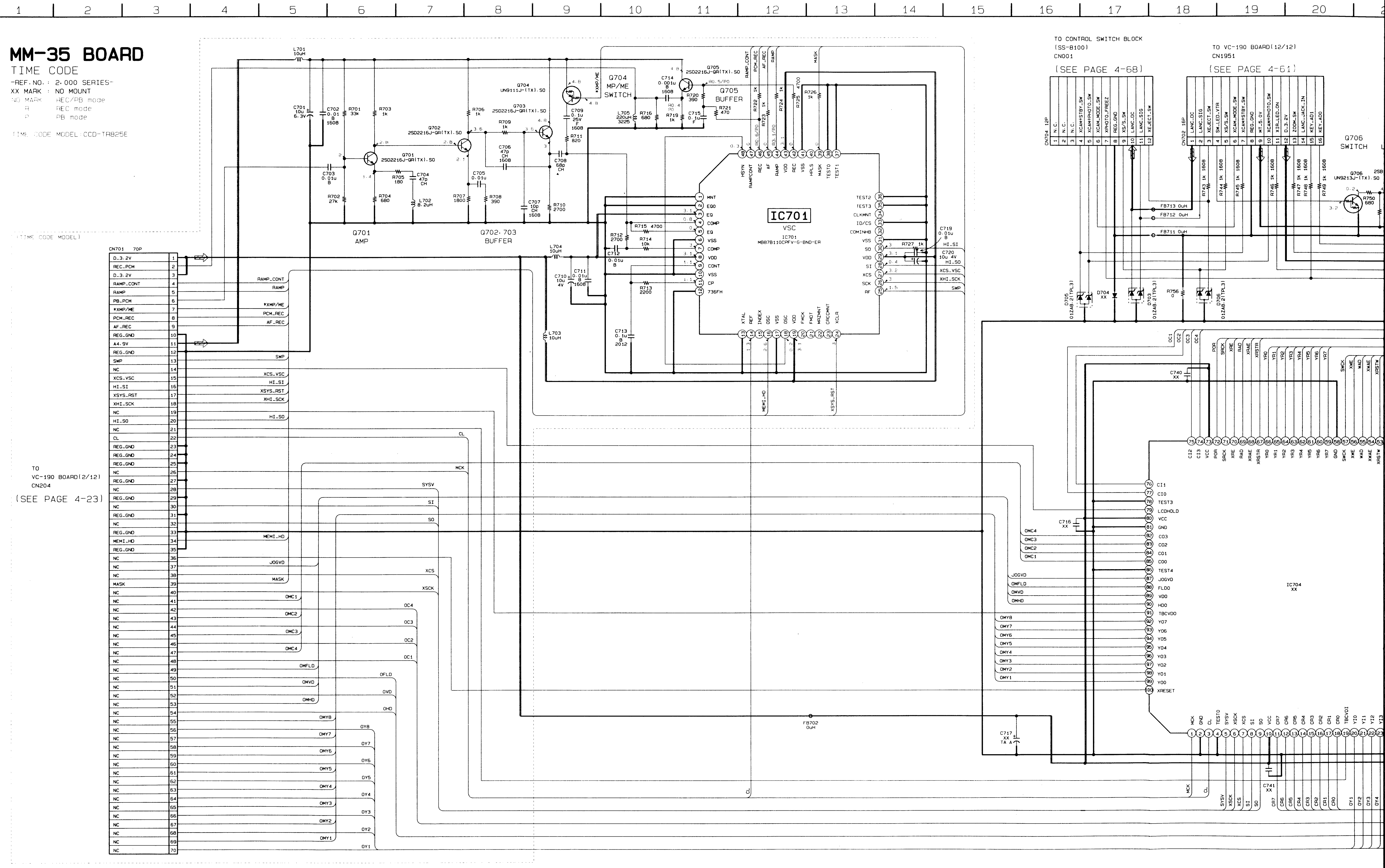
XX MARK : NO MOUNT

NO MARK : REC/PB mode

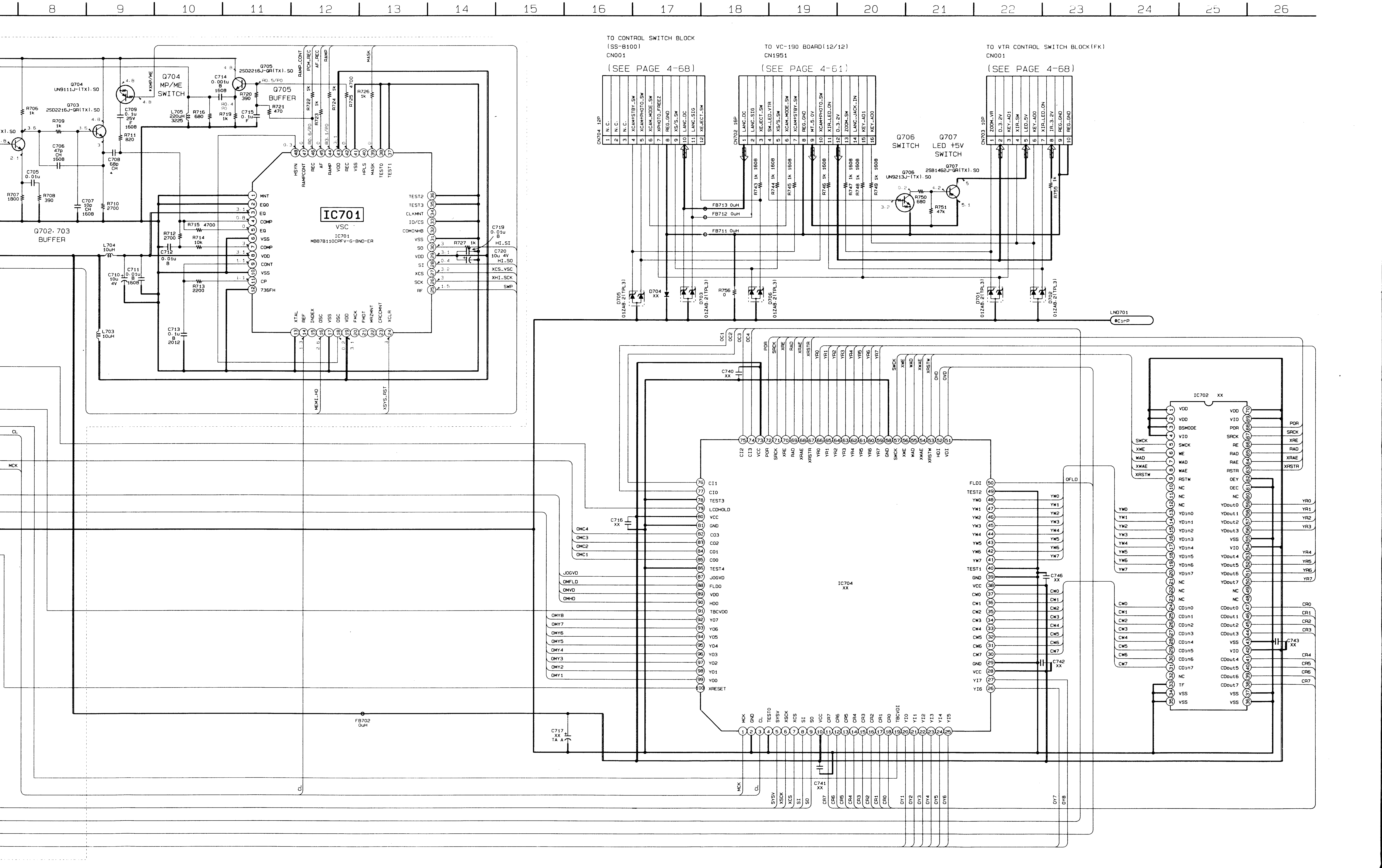
R : REC mode

P : PB mode

TIME CODE MODEL:CCD-TR825E



(TIME CODE MODEL)
CN701 70P
TO
VC-190 BOARD(2/12)
CN204
(SEE PAGE 4-23)
D_3.2V
REC_PCM
RAMP_CONT
RAMP
PB_PCM
*XMP/ME
PCM_REC
AF_REC
REG_GND
A4.9V
SWP
XCS_VSC
HI_SI
XSYS_RST
XHI_SCK
HI_SO
CL
MCK
SYSV
SI
SO
MEMI_HD
JOGVD
MASK
XCS
XSCK
OMC1
OMC2
OMC3
OMC4
OMFLD
OMVD
OMHD
OMY1
OMY2
OMY3
OMY4
OMY5
OMY6
OMY7
OMY8
OY1
OY2
OY3
OY4
OY5
OY6
OY7
OY8
OC1
OC2
OC3
OC4
OFLD
OVD
OHD
L701 10uH
Q701 AMP
Q702, 703 BUFFER
Q704 MP/ME SWITCH
Q705 BUFFER
UN9111J-(TX).SO
2SD2216J-QR(TX).SO
IC701
VSC
IC701
MB87B110CPFV-G-BND-ER
MNT
EQO
EQ
COMP
VSS
VDD
CONT
CP
736FH
TEST2
TEST3
CLKMNT
ID/CS
COMINHB
XTAL
REF
INDEX
OSC
FMCK
FHOT
MRZMNT
CRCMNT
XCLR
HSYN
RAMPCONT
HPLS
TEST0
TEST1
FB702 0uH
TO CONTROL SWITCH BLOCK
(SS-B100)
CN001
(SEE PAGE 4-68)
CN704 12P
XCAM+STBY_SW
XCAM+PHOTO_SW
XCAM_MODE_SW
XPHOTO_FREEZ
XS/S_SW
LANC_DC
LANC_SIG
XEJECT_SW
TO VC-190 BOARD(12/12)
CN1951
(SEE PAGE 4-61)
CN702 16P
XEJECT_SW
SW_LED_VTR
MT_5.0V
XIR_LED_ON
ZOOM_SW
LANC_JACK_IN
KEY_AD1
KEY_AD0
Q706 SWITCH
UN9213J-(TX).SO
FB711 0uH
FB712 0uH
FB713 0uH
D703 D705 D706 01ZA8.2(TPL3)
D704 XX
IC704 XX
C716 XX
C717 XX
C740 XX
C741 XX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17
18
19
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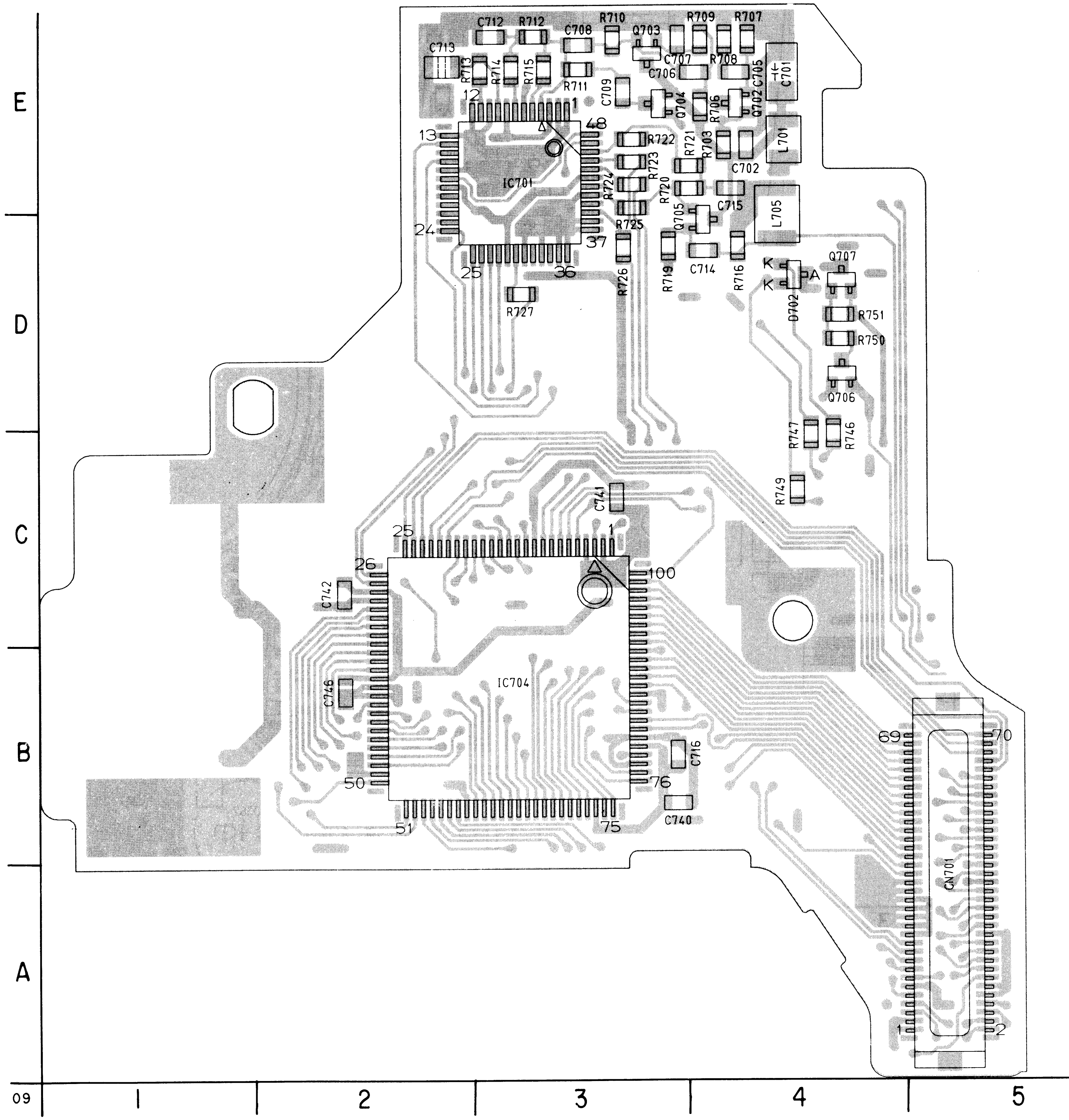
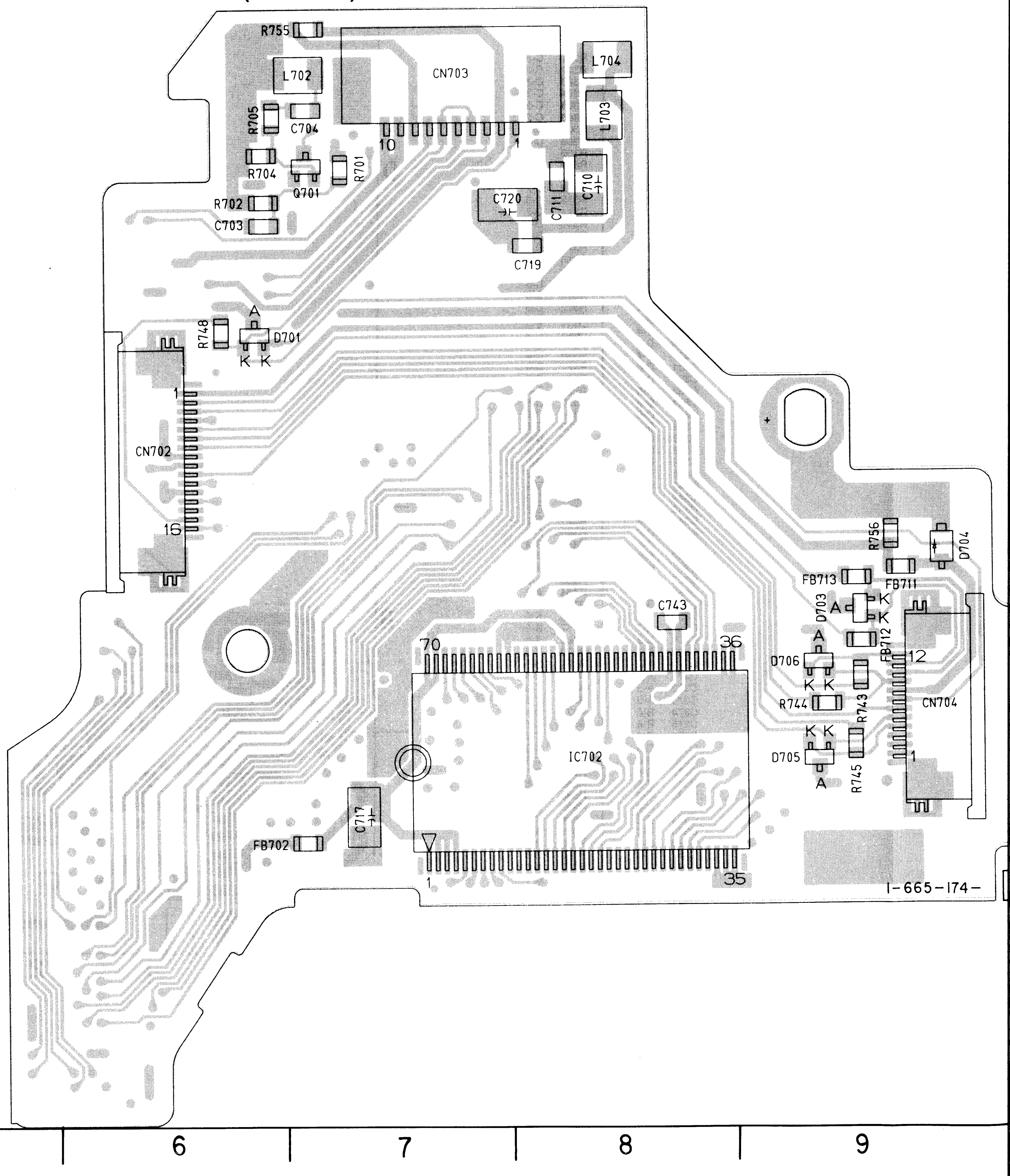
21
22
23
24
25
26
Q704 UN9111J-(TX).SO
Q703 2SD2216J-QR(TX).SO
Q704 MP/ME SWITCH
Q705 2SD2216J-QR(TX).SO
Q705 BUFFER
Q702, 703 BUFFER
R706 1k
R709 1k
C706 47p CH 1608
C705 0.01u
R707 1800
R708 390
C707 10p CH 1608
R710 2700
C708 68p CH
C709 0.1u 25V F 1608
R711 820
C714 0.001u B 1608
L705 220uH 3225
R716 680
R719 1k
C715 0.1u F
R720 390
R721 470
R722 1k
R723 1k
R724 1k
R725 4700
R726 1k
RAMP_CONT
PCM_REC
AF_REC
RAMP
MASK
XXMP/ME
L704 10uH
C710 10u 4V
C711 0.01u B 1608
C712 0.01u B
R712 2700
R714 10k
R715 4700
R713 2200
C713 0.1u B 2012
L703 10uH
IC701
VSC
IC701 MB87B110CPFV-G-BND-ER
HSYN
RAMPCONT
REC
AF
RAMP
VDD
REC
VSS
HPLS
MASK
TEST0
TEST1
MNT
EQO
EQ
COMP
EQ
VSS
COMP
VDD
CONT
VSS
CP
735FH
XTAL
REF
INDEX
OSC
VSS
OSC
VDD
FMCK
FMDT
MAZMNT
CRCOMNT
XCLR
TEST2
TEST3
CLKMNT
ID/CS
COMINHB
VSS
SO
VDD
SI
XCS
SCK
RF
R727 1k
C719 0.01u B
C720 10u 4V
HI_SI
HI_SO
XCS_VSC
XHI_SCK
SWP
MEMI_HD
XSYS_RST
CL
MCK
TO CONTROL SWITCH BLOCK (SS-8100) CN001
(SEE PAGE 4-68)
CN704 12P
N.C.
N.C.
N.C.
XCAMSTBY_SW
XCAMPHOTO_SW
XCAM_MODE_SW
XPHOTO_FREEZ
REG_GND
XS/S_SW
LANC_DC
LANC_SIG
XEJECT_SW
TO VC-190 BOARD (12/12) CN1951
(SEE PAGE 4-61)
CN702 16P
LANC_DC
LANC_SIG
XEJECT_SW
SW_LED_VTR
XS/S_SW
XCAM_MODE_SW
XCAMSTBY_SW
REG_GND
MT_5.0V
XCAMPHOTO_SW
XIR_LED_ON
D_3.2V
ZOOM_SW
LANC_JACK_IN
KEY_AD1
KEY_AD0
TO VTR CONTROL SWITCH BLOCK (FK) CN001
(SEE PAGE 4-68)
CN703 10P
ZOOM_VR
D_3.2V
KEY_AD1
XIR_SW
LED_5V
KEY_AD0
XIR_LED_ON
IR_3.2V
REG_GND
REG_GND
Q706 SWITCH
Q707 LED +5V SWITCH
Q706 UN9213J-(TX).SO
Q707 2SB1462J-QR(TX).SO
R750 680
R751 47k
R755 1k
R743 1k 1608
R744 1k 1608
R745 1k 1608
R746 1k 1608
R747 1k 1608
R748 1k 1608
R749 1k 1608
FB713 0uH
FB712 0uH
FB711 0uH
D705 01ZA8.2(TPL3)
D704 XX
D703 01ZA8.2(TPL3)
R756 0
D706 01ZA8.2(TPL3)
D701 01ZA8.2(TPL3)
D702 01ZA8.2(TPL3)
LND701
⊕CirP
C740 XX
C716 XX
OMC4
OMC3
OMC2
OMC1
JOGVD
OMFLD
OMVD
OMHD
OMY8
OMY7
OMY6
OMY5
OMY4
OMY3
OMY2
OMY1
IC704 XX
CI2
CI3
VCC
POR
SRCK
XRE
RAD
XRAE
XRSTR
YR0
YR1
YR2
YR3
YR4
YR5
YR6
YR7
GND
SWCK
XWE
WAD
XWAE
XRSTW
HDI
VDI
CI1
CI0
TEST3
LCDHOLD
VCC
GND
CO3
CO2
CO1
CO0
TEST4
JOGVD
FLDO
VDO
HDO
TBCVDO
YO7
YO6
YO5
YO4
YO3
YO2
YO1
YO0
XRESET
FLDI
TEST2
YW0
YW1
YW2
YW3
YW4
YW5
YW6
YW7
TEST1
GND
VCC
CW0
CW1
CW2
CW3
CW4
CW5
CW6
CW7
GND
VCC
YI7
YI6
MCK
GND
CL
TEST0
SYSV
XSCK
XCS
SI
SO
VCC
CR7
CR6
CR5
CR4
CR3
CR2
CR1
CR0
TBCVDI
YI0
YI1
YI2
YI3
YI4
YI5
C746 XX
C742 XX
C741 XX
C717 XX TA A
FB702 0uH
OFLD
OC1
OC2
OC3
OC4
OHD
OVD
OY1
OY2
OY3
OY4
OY5
OY6
OY7
OY8
IC702 XX
VDD
VDD
BSMODE
VIO
SWCK
WE
WAD
WAE
RSTW
NC
NC
NC
YDin0
YDin1
YDin2
YDin3
YDin4
YDin5
YDin6
YDin7
NC
NC
NC
CDin0
CDin1
CDin2
CDin3
CDin4
CDin5
CDin6
CDin7
NC
TF
VSS
VSS
VDD
VIO
POR
SRCK
RE
RAD
RAE
RSTR
OEY
OEC
NC
YDout0
YDout1
YDout2
YDout3
VSS
VIO
YDout4
YDout5
YDout6
YDout7
NC
NC
CDout0
CDout1
CDout2
CDout3
VSS
VIO
CDout4
CDout5
CDout6
CDout7
VSS
VSS
C743 XX
SWCK
XWE
WAD
XWAE
XRSTW
POR
SRCK
XRE
RAD
XRAE
XRSTR
YR0
YR1
YR2
YR3
YR4
YR5
YR6
YR7
CR0
CR1
CR2
CR3
CR4
CR5
CR6
CR7

MM-35 (TIME CODE) PRINTED WIRING BOARD
– Ref No. MM-35 BOARD: 2,000 series –

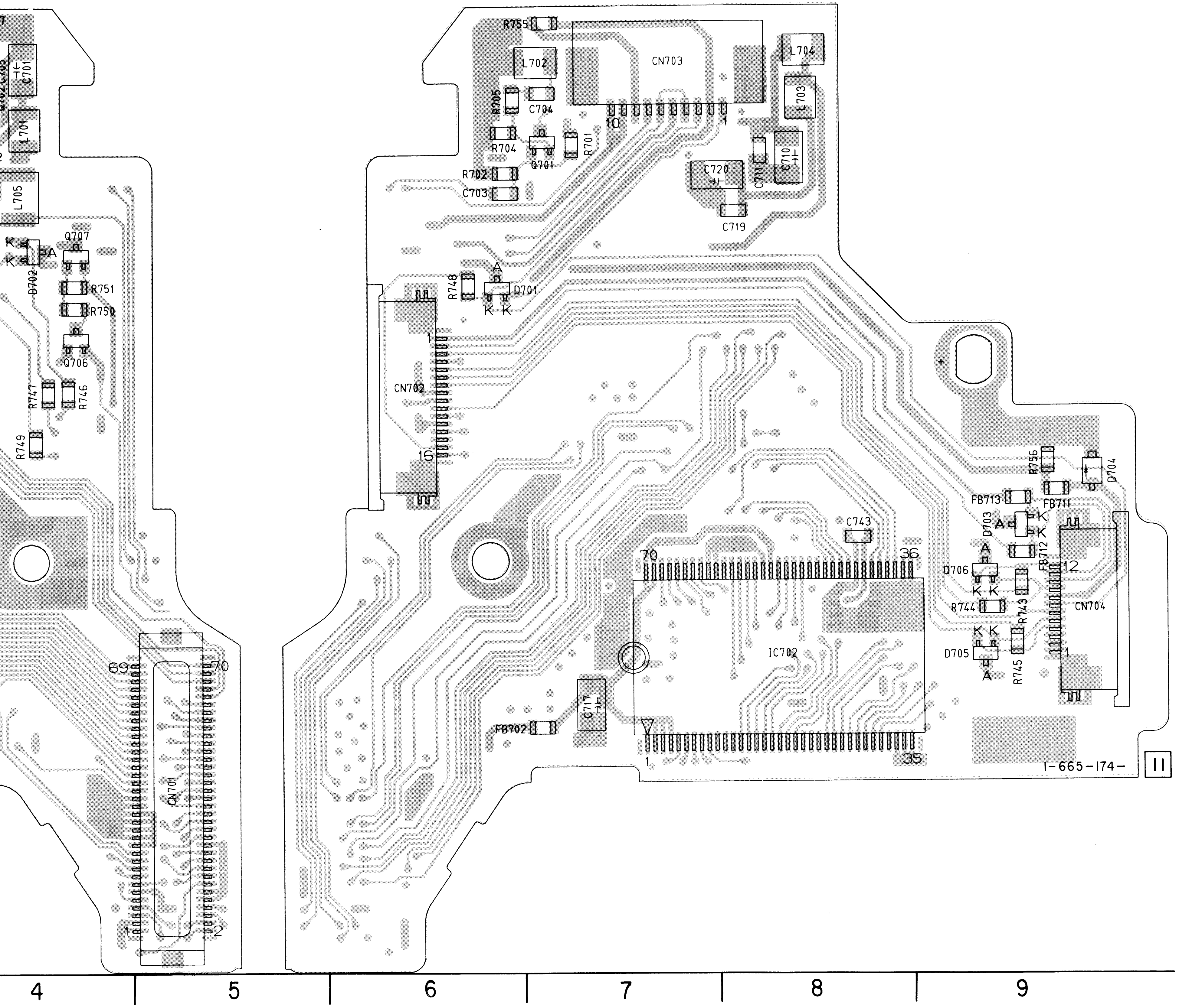
MM-35 BOARD (SIDE B)


E
D
C
B
A
09
1
2
3
4
5
C712
R712
C708
R710
Q703
R709
R707
C713
R713
R714
R715
R711
C707
C706
R708
C705
C701
C709
Q704
R706
Q702
IC701
12
1
13
48
24
37
25
36
R722
R723
R724
R725
R721
R703
R720
Q705
C702
L701
C715
L705
R726
R719
C714
R716
D702
K
K
A
Q707
R727
R751
R750
Q706
R747
R746
R749
C741
25
1
26
100
C742
IC704
C746
50
51
75
76
C716
C740
69
70
CN701
1
2

MM-35 BOARD (SIDE A)


R755
L702
CN703
L704
L703
R705
C704
10
1
R704
Q701
R701
C710
C711
C720
R702
C703
C719
R748
A
D701
K
K
CN702
1
16
R756
D704
FB713
FB711
C743
D703
A
K
K
FB712
12
70
36
D706
A
K
K
R744
R743
CN704
IC702
D705
K
K
A
R745
1
FB702
C717
1
35
1-665-174-
6
7
8
9

MM-35 BOARD (SIDE A)

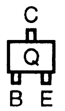

R755
L702
CN703
L704
L703
R705
C704
10
1
R704
Q701
R701
R702
C703
C720
C711
C710
C719
C701
L701
L705
K
K
A
Q707
D702
R751
R750
Q706
R747
R746
R749
R748
A
D701
K K
1
CN702
16
R756
D704
FB713
FB711
D703
A
K
K
C743
70
36
A
D706
FB712
12
K K
R744
CN704
R743
K K
D705
A
R745
1
IC702
69
70
C717
FB702
1
35
1-665-174-
11
CN701
1
2
4
5
6
7
8
9

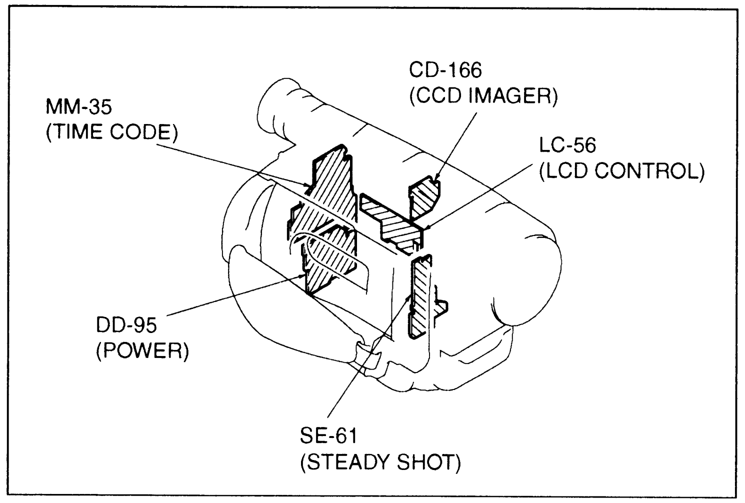
MM-35 BOARD	
C701	E-4
C702	E-4
C703	D-6
C704	E-7
C705	E-4
C706	E-4
C707	E-3
C708	E-3
C709	E-3
C710	E-8
C711	E-8
C712	E-3
C713	E-2
C714	D-4
C715	E-4
C716	B-2
C717	B-7
C719	D-8
C720	E-8
C740	B-2
C741	C-3
C742	C-2
C743	C-8
C746	B-2
CN701	A-5
CN702	D-6
CN703	E-7
CN704	B-9
D701	D-6
D702	D-4
D703	C-9
D704	C-9
D705	B-9
D706	C-9
FB702	B-7
FB711	C-9
FB712	C-9
FB713	C-9
IC701	E-3
IC702	B-7
IC704	B-2
L701	E-4
L702	E-7
L703	E-8
L704	E-8
L705	D-4
Q701	E-7
Q702	E-4
Q703	E-3
Q704	E-3
Q705	D-4
Q706	D-4
Q707	D-4
R701	E-7
R702	E-6
R703	E-4
R704	E-6
R705	E-6
R706	E-4
R707	E-4
R708	E-4
R709	E-4
R710	E-3
R711	E-3
R712	E-3
R713	E-3
R714	E-3
R715	E-3
R716	D-4
R719	D-3
R720	E-4
R721	E-4
R722	E-3
R723	E-3
R724	E-3
R725	E-3
R726	D-3
R727	D-3
R743	B-9
R744	B-9
R745	B-9
R746	C-4
R747	C-4
R748	D-6
R749	C-4
R750	D-4
R751	D-4
R755	E-7
R756	C-9

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor

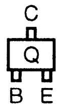


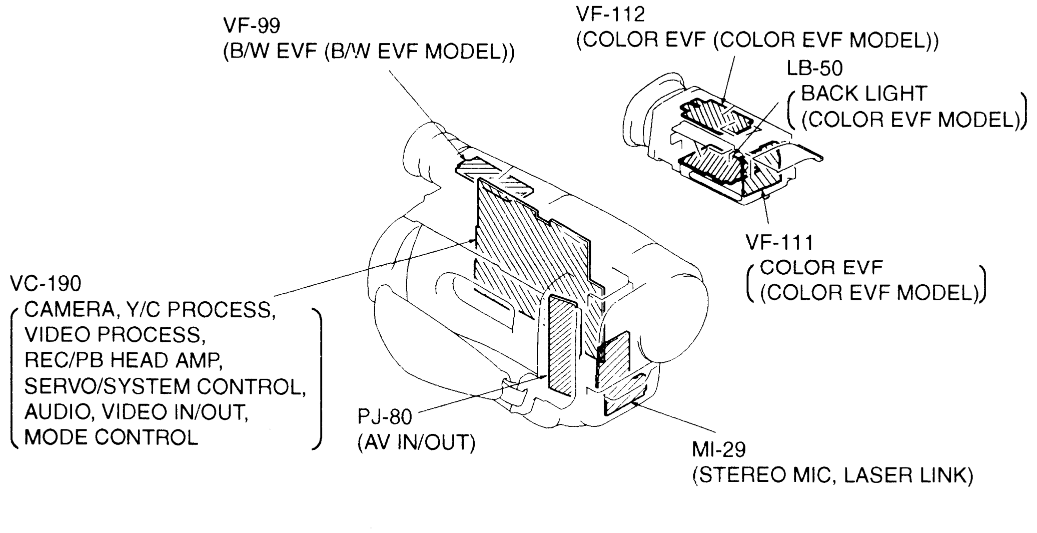

MM-35
(TIME CODE)
CD-166
(CCD IMAGER)
LC-56
(LCD CONTROL)
DD-95
(POWER)
SE-61
(STEADY SHOT)

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

> There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor



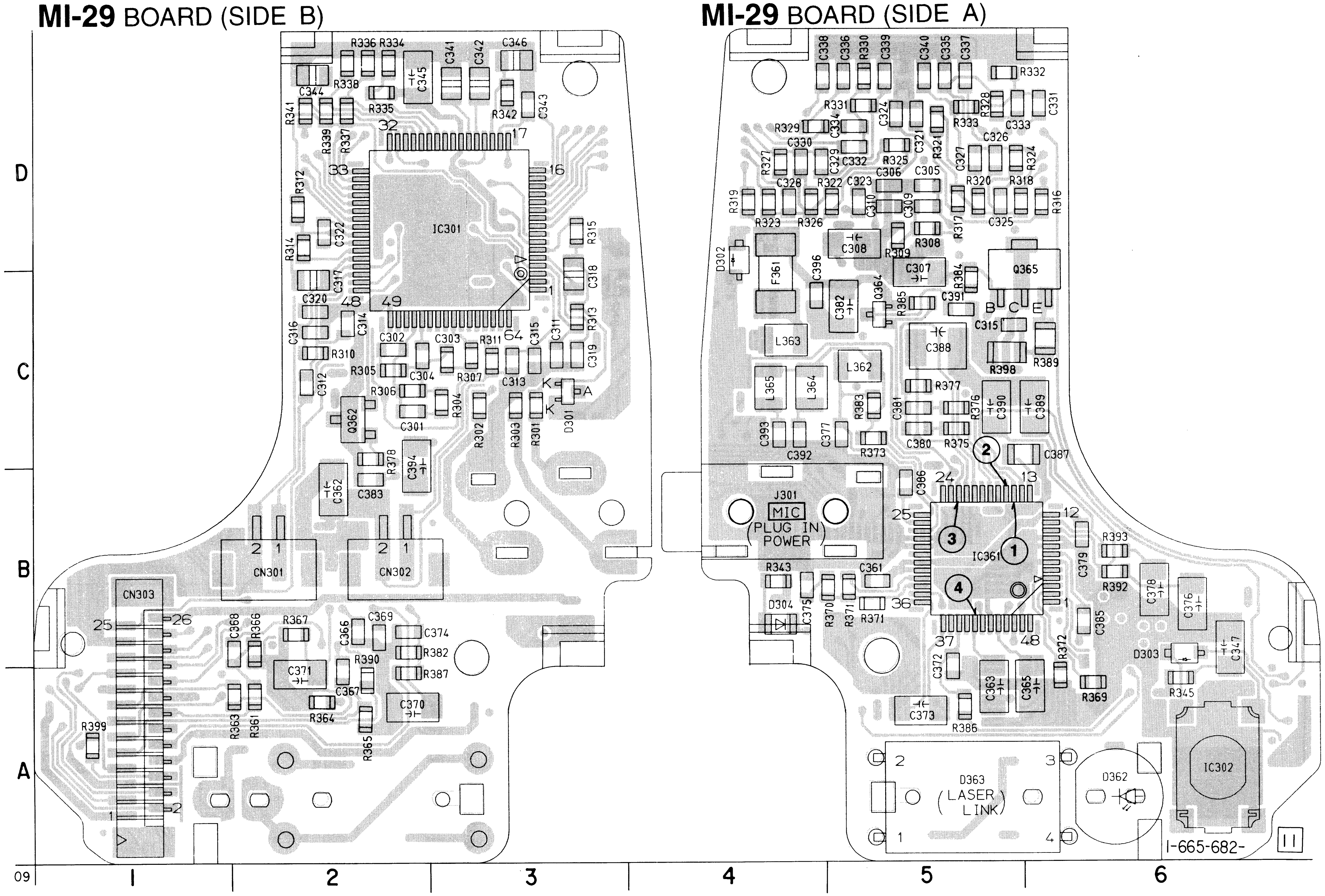

VF-99
(B/W EVF (B/W EVF MODEL))
VF-112
(COLOR EVF (COLOR EVF MODEL))
LB-50
BACK LIGHT
(COLOR EVF MODEL)
VF-111
COLOR EVF
(COLOR EVF MODEL)
VC-190
CAMERA, Y/C PROCESS,
VIDEO PROCESS,
REC/PB HEAD AMP,
SERVO/SYSTEM CONTROL,
AUDIO, VIDEO IN/OUT,
MODE CONTROL
PJ-80
(AV IN/OUT)
MI-29
(STEREO MIC, LASER LINK)

MI-29 (STEREO MIC, LASER AVLINK) PRINTED WIRING BOARD

– Ref No. MI-29 BOARD: 4,000 series –

MI-29 BOARD

C301	C-2
C302	C-2
C303	C-3
C304	C-2
C305	D-5
C306	D-5
C307	C-5
C308	D-5
C309	D-5
C310	D-5
C311	C-3
C312	C-2
C313	C-3
C314	C-2
C315	C-3
C316	C-2
C317	C-2
C318	C-3
C319	C-3
C320	C-2
C321	D-5
C322	D-2
C323	D-5
C324	D-5
C325	D-5
C326	D-5
C327	D-5
C328	D-4
C329	D-4
C330	D-4
C331	D-6
C332	D-5
C333	D-5
C334	D-5
C335	D-5
C336	D-5
C337	D-5
C338	D-4
C339	D-5
C340	D-5
C341	D-3
C342	D-3
C343	D-3
C344	D-2
C345	D-2
C346	D-3
C347	B-6
C361	B-5
C362	B-2
C363	A-5
C365	B-2
C366	B-2
C367	A-7
C368	B-2
C369	B-2
C370	A-2
C371	A-2
C372	A-5
C373	A-5
C374	B-2
C375	B-4
C376	B-6
C377	C-5
C378	B-6
C379	B-6
C380	C-5
C381	C-5
C382	C-4
C383	B-2
C385	B-6
C386	B-5
C387	C-5
C388	C-5
C389	C-6
C390	C-5
C391	C-5
C392	C-4
C393	C-4
C394	B-2
C395	C-5
CN301	B-2
CN302	B-2
CN303	A-1
D301	C-3
D302	D-4
D303	B-6
D304	B-4
D362	A-6
D363	A-5
F361	C-4
IC301	D-3
IC302	A-6
IC361	B-5
J301	B-4
L362	C-5
L363	C-4
L364	C-4
L365	C-4
Q362	C-2
Q364	C-5
Q365	C-5
R301	C-3
R302	C-3
R303	C-3
R304	C-3
R305	C-2
R306	C-2
R307	C-3
R308	D-5
R309	D-5
R310	C-2
R311	C-3
R312	D-2
R313	C-3
R314	D-2
R315	D-3
R316	D-6
R317	D-5
R318	D-5
R319	D-4
R320	D-5
R321	D-5
R322	D-5
R323	D-4
R324	D-5
R325	D-5
R326	D-4
R327	D-4
R328	D-5
R329	D-4
R330	D-5
R331	D-5
R332	D-5
R333	D-5
R334	D-2
R335	D-2
R336	D-2
R337	D-2
R338	D-2
R339	D-2
R341	D-2
R342	D-3
R343	B-4
R345	A-6
R361	A-2
R363	A-2
R364	A-2
R365	A-2
R366	B-2
R367	B-2
R369	A-6
R370	B-5
R371	B-5
R372	A-6
R373	C-5
R375	C-5
R376	C-5
R377	C-5
R378	C-2
R382	B-2
R383	C-5
R384	C-5
R385	C-5
R386	A-5
R387	A-2
R389	C-5
R390	A-2
R392	B-6
R393	B-6
R397	A-6
R398	C-5
R399	A-1



MI-29 BOARD (SIDE B)

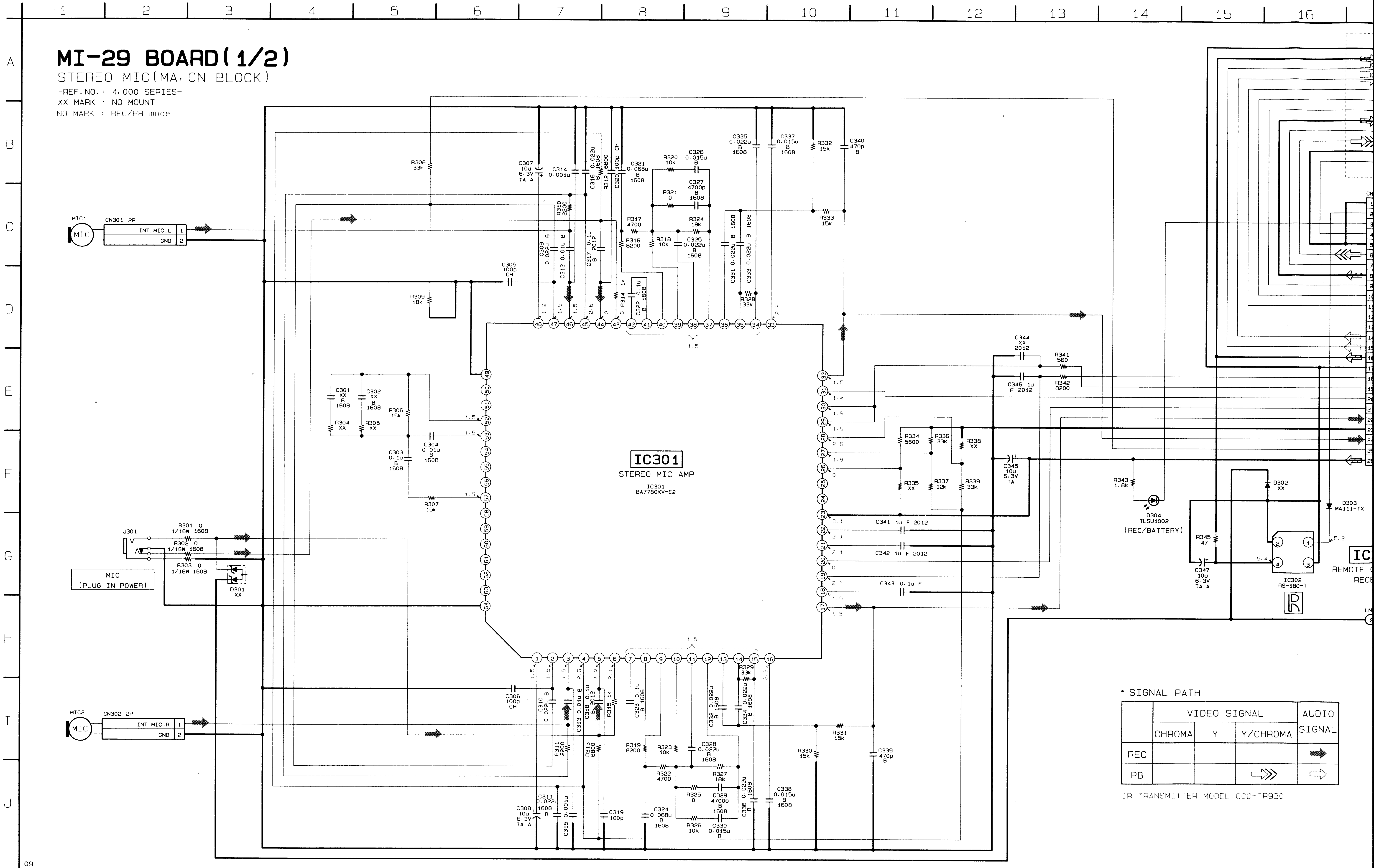
MI-29 BOARD (SIDE A)

D
C
B
A
09
1
2
3
4
5
6
IC301
CN301
CN302
CN303
Q362
D301
J301
MIC
(PLUG IN POWER)
IC361
IC302
Q364
Q365
F361
L362
L363
L364
L365
D302
D303
D304
D362
D363
(LASER LINK)
①
②
③
④
1-665-682-
11

MI-29 BOARD(1/2)

STEREO MIC(MA, CN BLOCK)

-REF. NO. : 4,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode

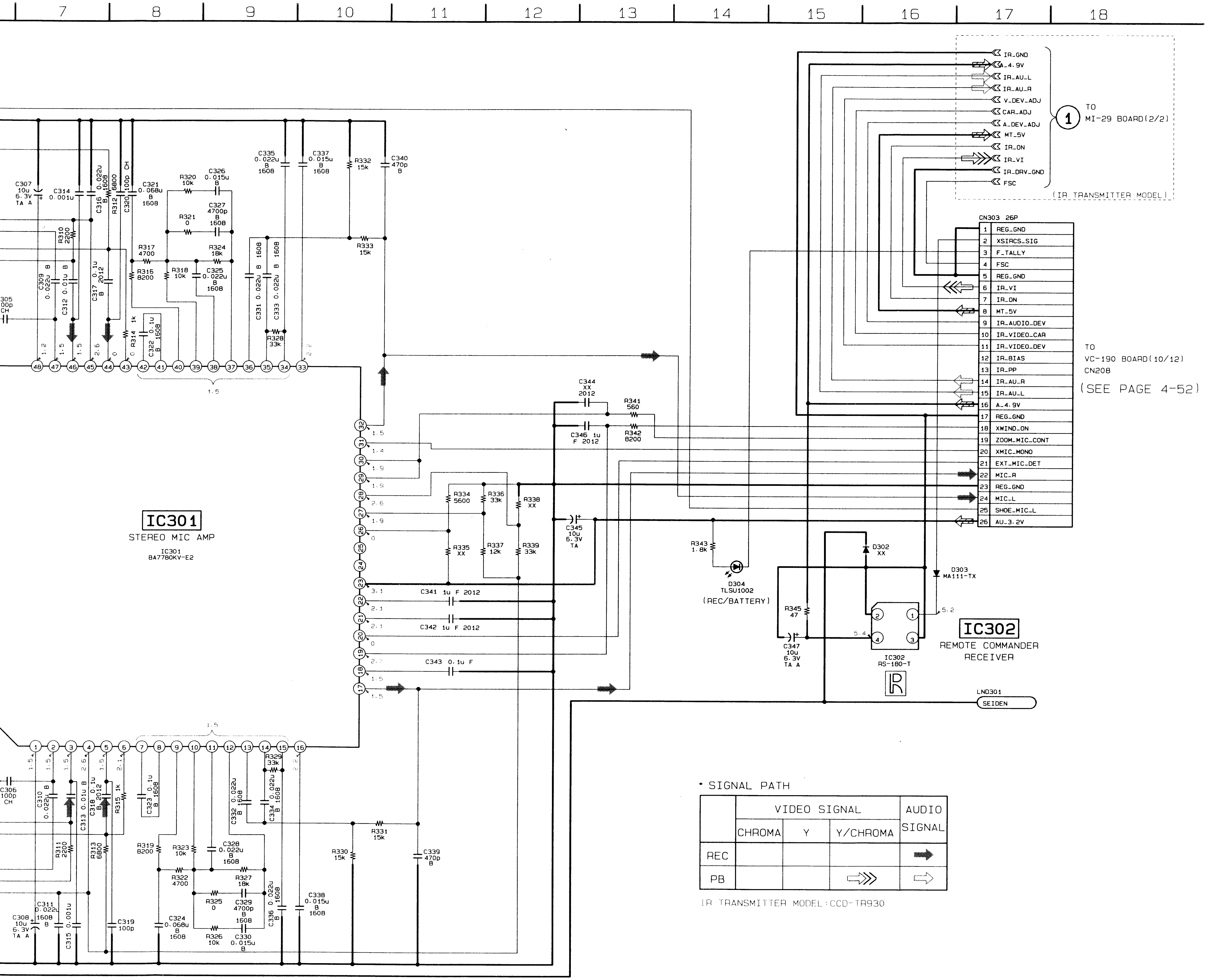


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
MIC1
MIC
CN301 2P
INT_MIC_L
GND
MIC2
CN302 2P
INT_MIC_R
J301
R301 0 1/16W 1608
R302 0 1/16W 1608
R303 0 1/16W 1608
MIC (PLUG IN POWER)
D301 XX
R308 33k
R309 18k
C305 100p CH
C306 100p CH
C307 10u 6.3V TA A
C314 0.001u
C316 0.022u B 1608
R312 6800
C320 100p CH
C321 0.068u B 1608
R320 10k
C326 0.015u B
R321 0
C327 4700p B 1608
R317 4700
R324 18k
R316 8200
R318 10k
C325 0.022u B 1608
C335 0.022u B 1608
C337 0.015u B 1608
R332 15k
C340 470p B
R333 15k
C331 0.022u B 1608
C333 0.022u B 1608
R328 33k
R310 2200
C309 0.022u B
C312 0.01u B
C317 0.1u 2012 B
R314 1k
C322 0.1u B 1608
C301 XX B 1608
C302 XX B 1608
R304 XX
R305 XX
R306 15k
C303 0.1u B 1608
C304 0.01u B 1608
R307 15k
IC301
STEREO MIC AMP
IC301 BA7780KV-E2
C344 XX 2012
R341 560
C346 1u F 2012
R342 8200
R334 5600
R336 33k
R338 XX
R335 XX
R337 12k
R339 33k
C345 10u 6.3V TA
C341 1u F 2012
C342 1u F 2012
C343 0.1u F
R343 1.8k
D304 TLSU1002 (REC/BATTERY)
D302 XX
D303 MA111-TX
R345 47
C347 10u 6.3V TA A
IC302 RS-180-T
REMOTE
C310 0.022u B
C313 0.01u B
C318 0.1u B 2012
R315 1k
C323 0.1u B 1608
C332 0.022u 1608
C334 0.022u B 1608
R329 33k
R331 15k
R330 15k
C339 470p B
R311 2200
R313 6800
R319 8200
R323 10k
C328 0.022u B 1608
R322 4700
R327 18k
R325 0
C329 4700p B 1608
C336 0.022u 1608 B
C338 0.015u B 1608
C308 10u 6.3V TA A
C311 0.022u 1608 B
C315 0.001u
C319 100p
C324 0.068u B 1608
R326 10k
C330 0.015u B
09

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB			⇨»	⇨

IR TRANSMITTER MODEL: CCD-TR930


7
8
9
10
11
12
13
14
15
16
17
18
IR_GND
A_4.9V
IR_AU_L
IR_AU_R
V_DEV_ADJ
CAR_ADJ
A_DEV_ADJ
MT_5V
IR_ON
IR_VI
IR_DRV_GND
FSC
①
TO
MI-29 BOARD(2/2)
(IR TRANSMITTER MODEL)
CN303 26P
1 REG_GND
2 XSIRCS_SIG
3 F_TALLY
4 FSC
5 REG_GND
6 IR_VI
7 IR_ON
8 MT_5V
9 IR_AUDIO_DEV
10 IR_VIDEO_CAR
11 IR_VIDEO_DEV
12 IR_BIAS
13 IR_PP
14 IR_AU_R
15 IR_AU_L
16 A_4.9V
17 REG_GND
18 XWIND_ON
19 ZOOM_MIC_CONT
20 XMIC_MONO
21 EXT_MIC_DET
22 MIC_R
23 REG_GND
24 MIC_L
25 SHOE_MIC_L
26 AU_3.2V
TO
VC-190 BOARD(10/12)
CN208
(SEE PAGE 4-52)
IC301
STEREO MIC AMP
IC301
BA7780KV-E2
IC302
REMOTE COMMANDER
RECEIVER
IC302
RS-180-T
D302 XX
D303 MA111-TX
D304 TLSU1002
(REC/BATTERY)
R343 1.8k
R345 47
C347 10u 6.3V TA A
LND301
SEIDEN
C344 XX 2012
C346 1u F 2012
R341 560
R342 8200
C345 10u 6.3V TA
R334 5600
R336 33k
R338 XX
R335 XX
R337 12k
R339 33k
C341 1u F 2012
C342 1u F 2012
C343 0.1u F
C307 10u 6.3V TA A
C314 0.001u
C316 0.022u B 1608
R312 6800
C320 100p CH
C321 0.068u B 1608
R320 10k
C326 0.015u B
C327 4700p B 1608
R321 0
R317 4700
R324 18k
R318 10k
C325 0.022u B 1608
R315 8200
C335 0.022u B 1608
C337 0.015u B 1608
R332 15k
C340 470p B
R333 15k
C331 0.022u B 1608
C333 0.022u B 1608
R328 33k
R310 2200
C309 0.022u B
C312 0.01u B
C317 0.1u 2012 B
R314 1k
C322 0.1u B 1608
C305 100p CH
C306 100p CH
C310 0.022u B
C313 0.01u B
C318 0.1u B 2012
R315 1k
C323 0.1u B 1608
C332 0.022u B 1608
C334 0.022u B 1608
R329 33k
R331 15k
R330 15k
C339 470p B
R311 2200
R313 6800
R319 8200
R323 10k
C328 0.022u B 1608
R322 4700
R327 18k
R325 0
C329 4700p B 1608
C336 0.022u B 1608
C338 0.015u B 1608
C311 0.022u 1608 B
C308 10u 6.3V TA A
C315 0.001u
C319 100p
C324 0.068u B 1608
R326 10k
C330 0.015u B

• SIGNAL PATH

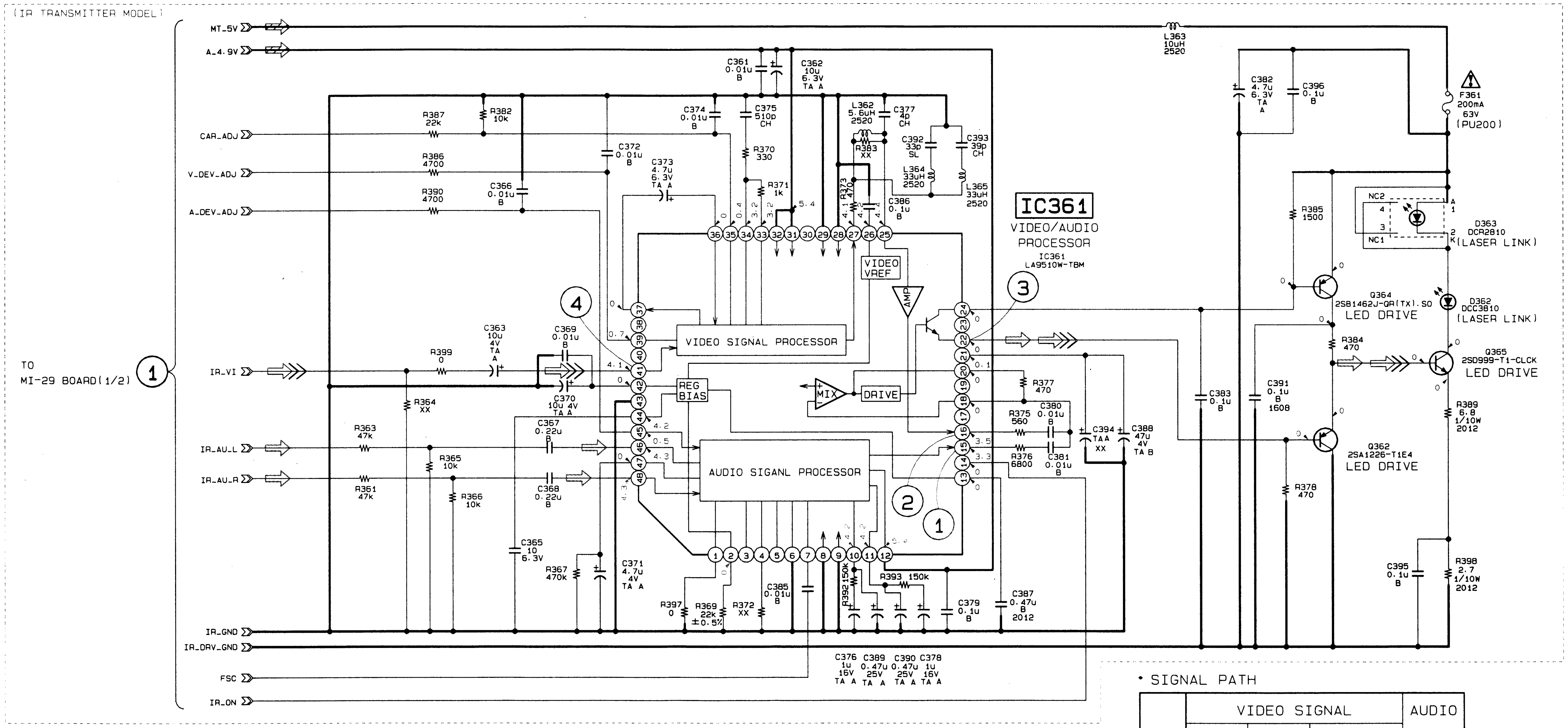
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB			⇨》	⇨

IR TRANSMITTER MODEL:CCD-TR930

MI-29 BOARD(2/2)

LASER LINK(IR BLOCK)

-REF.NO.: 4,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode


1 2 3 4 5 6 7 8 9 10 11 12 13
A B C D E F G H
(IR TRANSMITTER MODEL)
TO MI-29 BOARD(1/2)
①
MT_5V
A_4.9V
CAR_ADJ
V_DEV_ADJ
A_DEV_ADJ
IR_VI
IR_AU_L
IR_AU_R
IR_GND
IR_DRV_GND
FSC
IR_ON
R387 22k
R382 10k
R386 4700
R390 4700
C366 0.01u B
C372 0.01u B
C373 4.7u 6.3V TA A
C361 0.01u B
C362 10u 6.3V TA A
C374 0.01u B
C375 510p CH
R370 330
R371 1k
L362 5.6uH 2520
C377 4p CH
R383 XX
C392 33p SL
C393 39p CH
L364 33uH 2520
L365 33uH 2520
R373 470
C386 0.1u B
R399 0
C363 10u 4V TA A
C369 0.01u B
C370 10u 4V TA A
R364 XX
R363 47k
R365 10k
R361 47k
R366 10k
C367 0.22u B
C368 0.22u B
C365 10 6.3V
R367 470k
C371 4.7u 4V TA A
R397 0
R369 22k ±0.5%
R372 XX
C385 0.01u B
R392 150k
R393 150k
C379 0.1u B
C387 0.47u B 2012
C376 1u 16V TA A
C389 0.47u 25V TA A
C390 0.47u 25V TA A
C378 1u 16V TA A
VIDEO SIGNAL PROCESSOR
AUDIO SIGANL PROCESSOR
REG BIAS
VIDEO VREF
AMP
MIX
DRIVE
IC361
VIDEO/AUDIO PROCESSOR
IC361 LA9510W-TBM
②
③
④
R377 470
R375 560
R376 6800
C380 0.01u B
C381 0.01u B
C394 TA A XX
C388 47u 4V TA B
L363 10uH 2520
C382 4.7u 6.3V TA A
C396 0.1u B
F361 200mA 63V (PU200)
NC2
NC1
D363 DCR2810 (LASER LINK)
R385 1500
Q364 2SB1462J-QR(TX).SO LED DRIVE
D362 DCC3810 (LASER LINK)
R384 470
Q365 2SD999-T1-CLCK LED DRIVE
C383 0.1u B
C391 0.1u B 1608
R389 6.8 1/10W 2012
Q362 2SA1226-T1E4 LED DRIVE
R378 470
C395 0.1u B
R398 2.7 1/10W 2012

• SIGNAL PATH

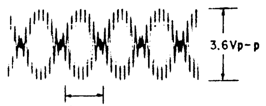
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB			⇨⟫	⇨

IR TRANSMITTER MODEL:CCD-TR930

09

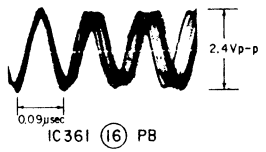
MI-29 BOARD (IR BLOCK)

①



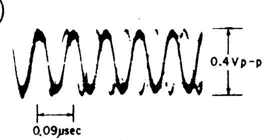
IC361 ⑮ PB

②



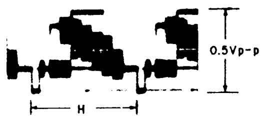
IC361 ⑯ PB

③



IC361 ㉒ PB

④

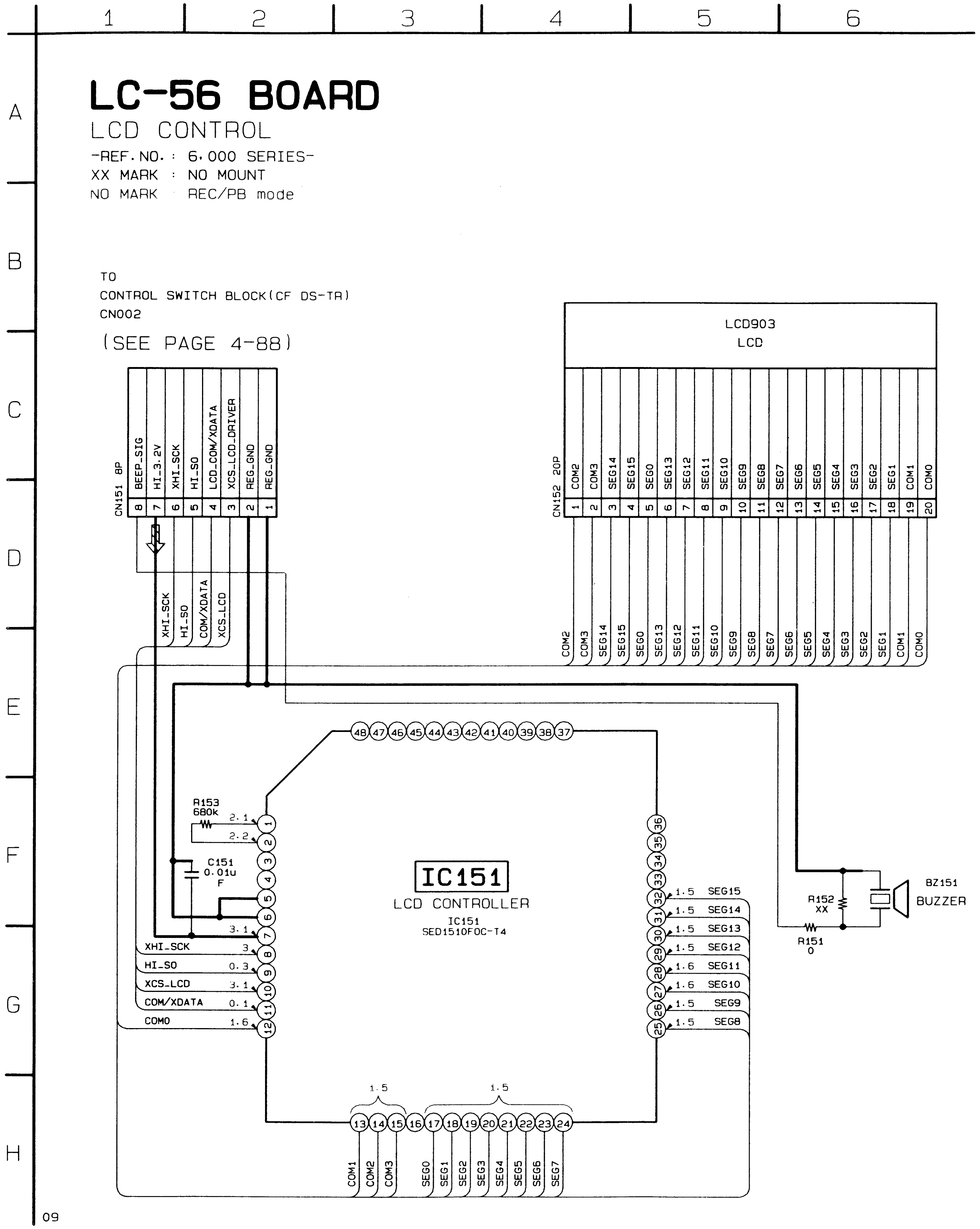


IC361 ㊶ PB

LC-56 BOARD

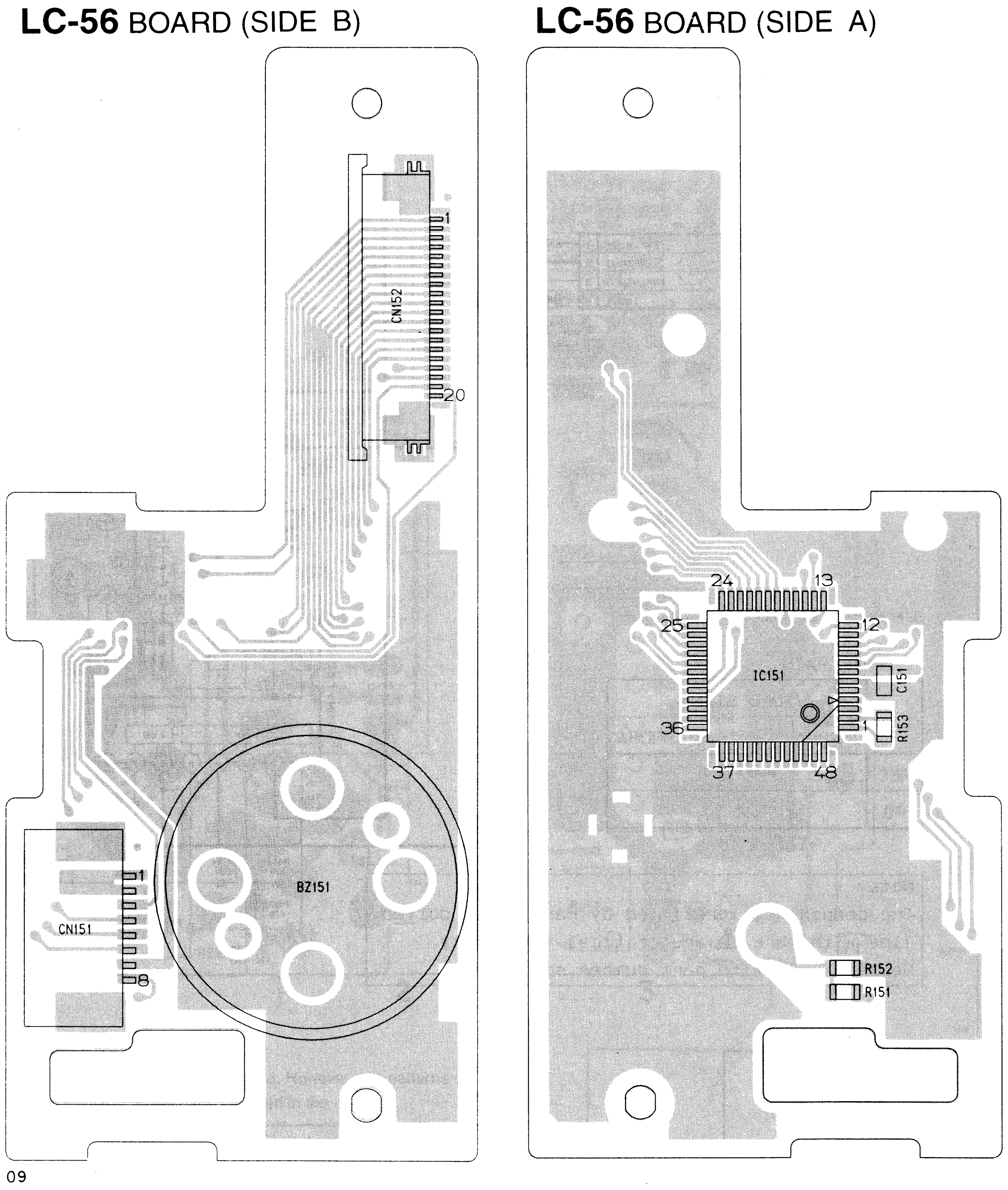
LCD CONTROL

-REF.NO.: 6,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode


1
2
3
4
5
6
A
B
C
D
E
F
G
H
TO
CONTROL SWITCH BLOCK(CF DS-TR)
CN002
(SEE PAGE 4-88)
CN151 8P
8 BEEP_SIG
7 HI_3.2V
6 XHI_SCK
5 HI_SO
4 LCD_COM/XDATA
3 XCS_LCD_DRIVER
2 REG_GND
1 REG_GND
XHI_SCK
HI_SO
COM/XDATA
XCS_LCD
LCD903
LCD
CN152 20P
1 COM2
2 COM3
3 SEG14
4 SEG15
5 SEG0
6 SEG13
7 SEG12
8 SEG11
9 SEG10
10 SEG9
11 SEG8
12 SEG7
13 SEG6
14 SEG5
15 SEG4
16 SEG3
17 SEG2
18 SEG1
19 COM1
20 COM0
R153
680k
C151
0.01u
F
IC151
LCD CONTROLLER
IC151
SED1510F0C-T4
2.1
2.2
3.1
3
0.3
3.1
0.1
1.6
XHI_SCK
HI_SO
XCS_LCD
COM/XDATA
COM0
1.5 SEG15
1.5 SEG14
1.5 SEG13
1.5 SEG12
1.6 SEG11
1.6 SEG10
1.5 SEG9
1.5 SEG8
1.5
1.5
COM1
COM2
COM3
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
R152
XX
R151
0
BZ151
BUZZER
09

LC-56 (LCD CONTROL) PRINTED WIRING BOARD

– Ref No. LC-56 BOARD: 6,000 series –


LC-56 BOARD (SIDE B)

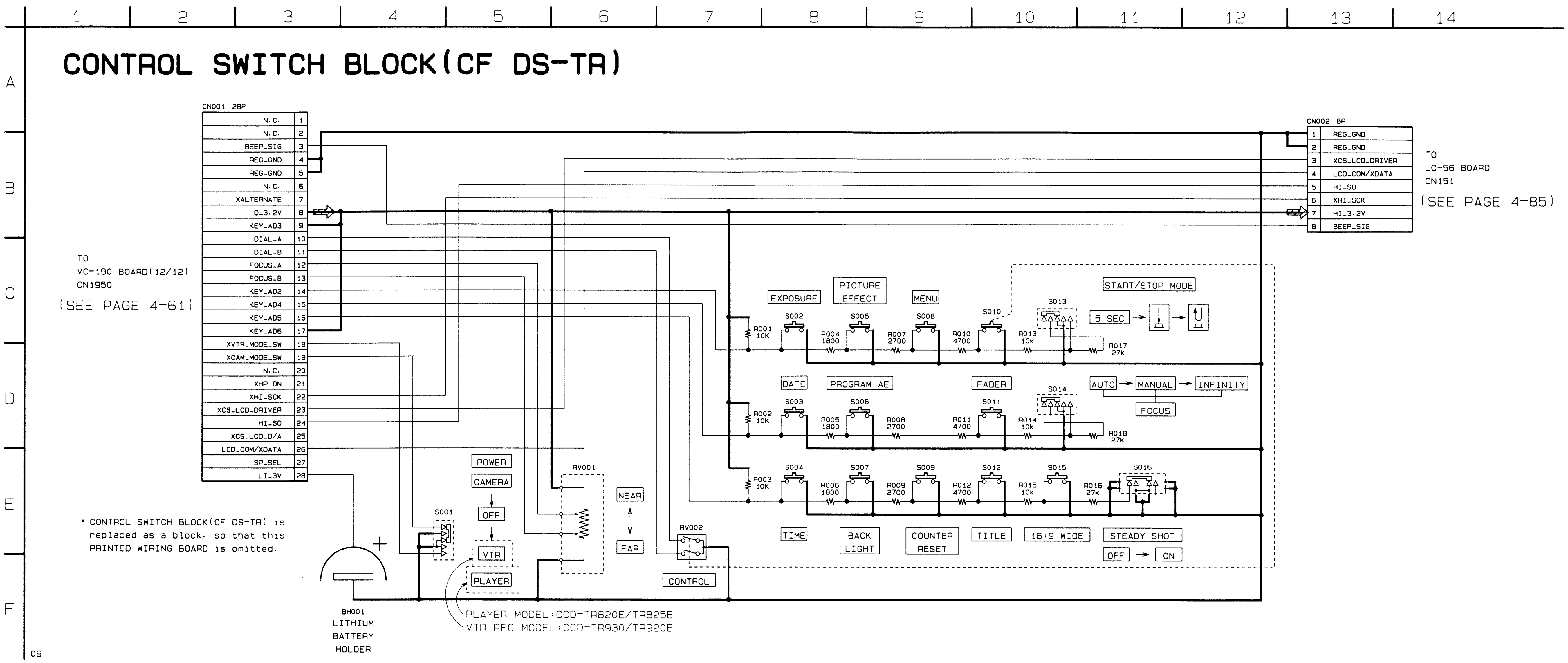
LC-56 BOARD (SIDE A)

CN152
1
20
CN151
1
8
BZ151
24
13
25
12
IC151
36
37
48
1
C151
R153
R152
R151
09

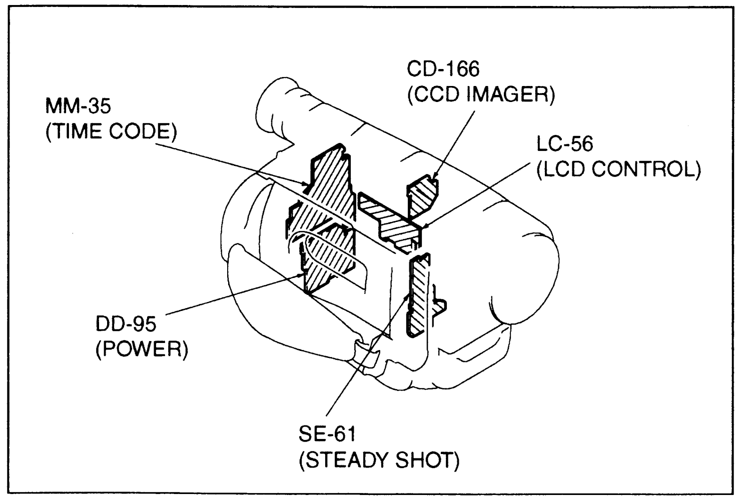
- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

CONTROL SWITCH BLOCK(CF DS-TR)


1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
09
CN001 28P
N.C. 1
N.C. 2
BEEP_SIG 3
REG_GND 4
REG_GND 5
N.C. 6
XALTERNATE 7
D_3.2V 8
KEY_AD3 9
DIAL_A 10
DIAL_B 11
FOCUS_A 12
FOCUS_B 13
KEY_AD2 14
KEY_AD4 15
KEY_AD5 16
KEY_AD6 17
XVTR_MODE_SW 18
XCAM_MODE_SW 19
N.C. 20
XHP ON 21
XHI_SCK 22
XCS_LCD_DRIVER 23
HI_SO 24
XCS_LCD_D/A 25
LCD_COM/XDATA 26
SP_SEL 27
LI_3V 28
TO
VC-190 BOARD(12/12)
CN1950
(SEE PAGE 4-61)
CN002 8P
1 REG_GND
2 REG_GND
3 XCS_LCD_DRIVER
4 LCD_COM/XDATA
5 HI_SO
6 XHI_SCK
7 HI_3.2V
8 BEEP_SIG
TO
LC-56 BOARD
CN151
(SEE PAGE 4-85)
EXPOSURE
PICTURE EFFECT
MENU
START/STOP MODE
S002
S005
S008
S010
S013
5 SEC
R001 10K
R004 1800
R007 2700
R010 4700
R013 10k
R017 27k
DATE
PROGRAM AE
FADER
AUTO
MANUAL
INFINITY
FOCUS
S003
S006
S011
S014
R002 10K
R005 1800
R008 2700
R011 4700
R014 10k
R018 27k
S004
S007
S009
S012
S015
S016
R003 10K
R006 1800
R009 2700
R012 4700
R015 10k
R016 27k
TIME
BACK LIGHT
COUNTER RESET
TITLE
16:9 WIDE
STEADY SHOT
OFF
ON
POWER
CAMERA
OFF
VTR
PLAYER
S001
RV001
NEAR
FAR
RV002
CONTROL
BH001
LITHIUM
BATTERY
HOLDER
PLAYER MODEL:CCD-TR820E/TR825E
VTR REC MODEL:CCD-TR930/TR920E

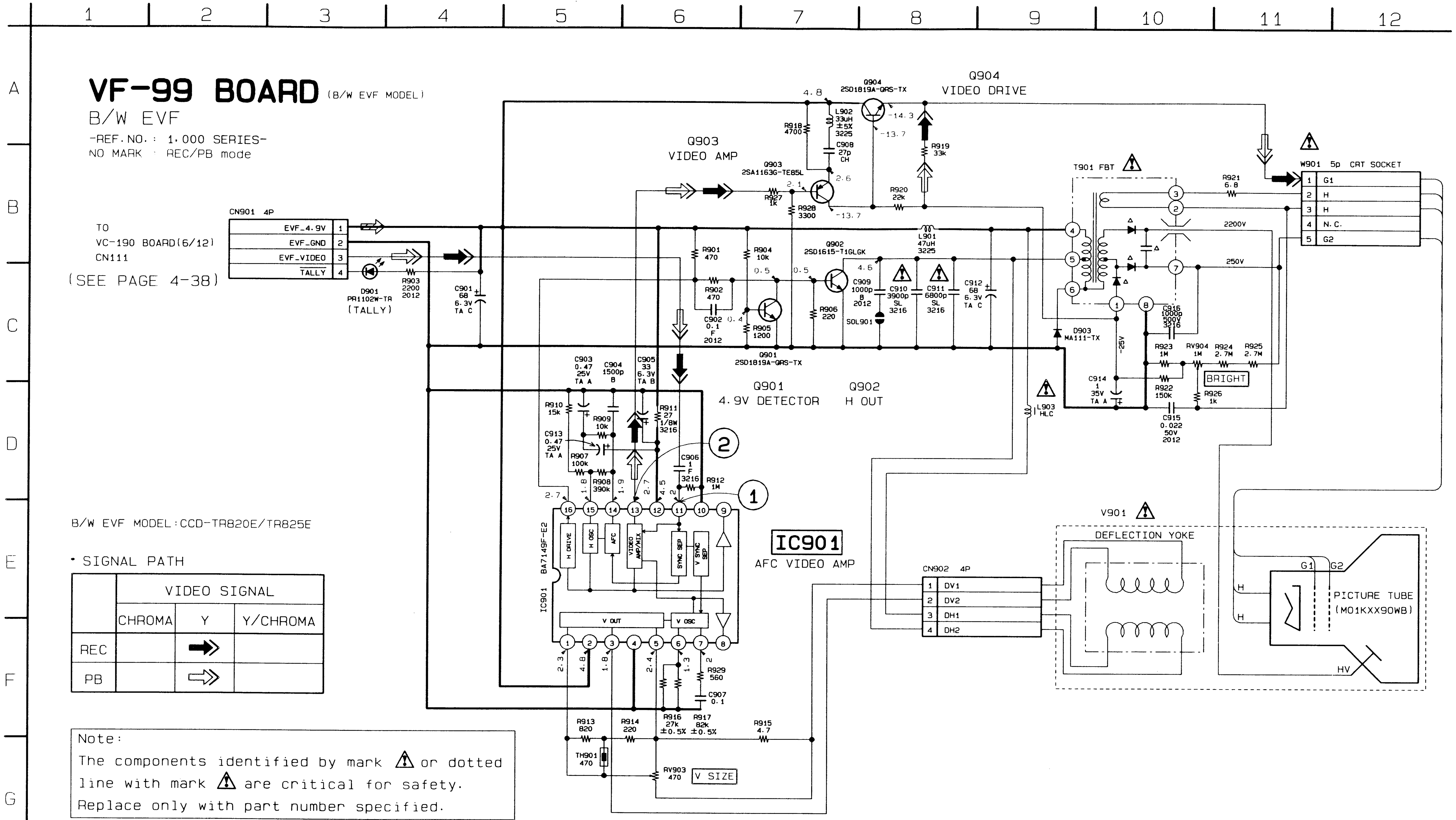
- CONTROL SWITCH BLOCK(CF DS-TR) is replaced as a block, so that this PRINTED WIRING BOARD is omitted.


CD-166
(CCD IMAGER)
MM-35
(TIME CODE)
LC-56
(LCD CONTROL)
DD-95
(POWER)
SE-61
(STEADY SHOT)

VF-99 BOARD (B/W EVF MODEL)

B/W EVF

-REF. NO. : 1,000 SERIES-
NO MARK : REC/PB mode

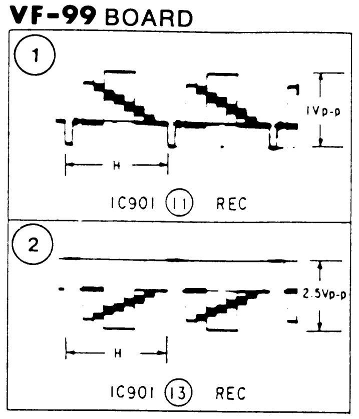

1 2 3 4 5 6 7 8 9 10 11 12
A B C D E F G
TO VC-190 BOARD(6/12) CN111
(SEE PAGE 4-38)
CN901 4P
EVF_4.9V 1
EVF_GND 2
EVF_VIDEO 3
TALLY 4
D901 PR1102W-TR (TALLY)
R903 2200 2012
C901 68 6.3V TA C
Q904 2SD1819A-QRS-TX
Q904 VIDEO DRIVE
Q903 VIDEO AMP
Q903 2SA1163G-TE85L
R918 4700
L902 33uH ±5% 3225
C908 27p CH
R919 33k
R920 22k
R927 1k
R928 3300
R901 470
R904 10k
R902 470
C902 0.1 F 2012
R905 1200
Q902 2SD1615-T1GLGK
L901 47uH 3225
C909 1000p B 2012
C910 3900p SL 3216
C911 6800p SL 3216
C912 68 6.3V TA C
R906 220
SOL901
Q901 2SD1819A-QRS-TX
Q901 4.9V DETECTOR
Q902 H OUT
T901 FBT
R921 6.8
2200V
250V
W901 5p CRT SOCKET
1 G1
2 H
3 H
4 N.C.
5 G2
D903 MA111-TX
-25V
C914 1 35V TA A
C916 1000p 500V 3216
R923 1M
RV904 1M
R924 2.7M
R925 2.7M
BRIGHT
R922 150k
R926 1k
C915 0.022 50V 2012
L903 HLC
C903 0.47 25V TA A
C904 1500p B
C905 33 6.3V TA B
R910 15k
R909 10k
R911 27 1/8W 3216
C913 0.47 25V TA A
R907 100k
R908 390k
C906 1 F 3216
R912 1M
IC901 BA7149F-E2
H DRIVE
H OSC
AFC
VIDEO AMP/MIX
SYNC SEP
V SYNC SEP
V OUT
V OSC
IC901
AFC VIDEO AMP
R929 560
C907 0.1
R913 820
R914 220
R916 27k ±0.5%
R917 82k ±0.5%
R915 4.7
TH901 470
RV903 470
V SIZE
V901
DEFLECTION YOKE
CN902 4P
1 DV1
2 DV2
3 DH1
4 DH2
G1
G2
H
PICTURE TUBE (M01KXX90WB)
HV

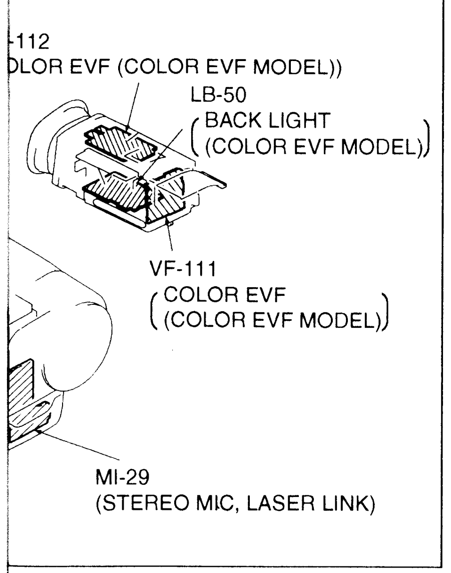
B/W EVF MODEL : CCD-TR820E/TR825E

• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡	
PB		⇨	

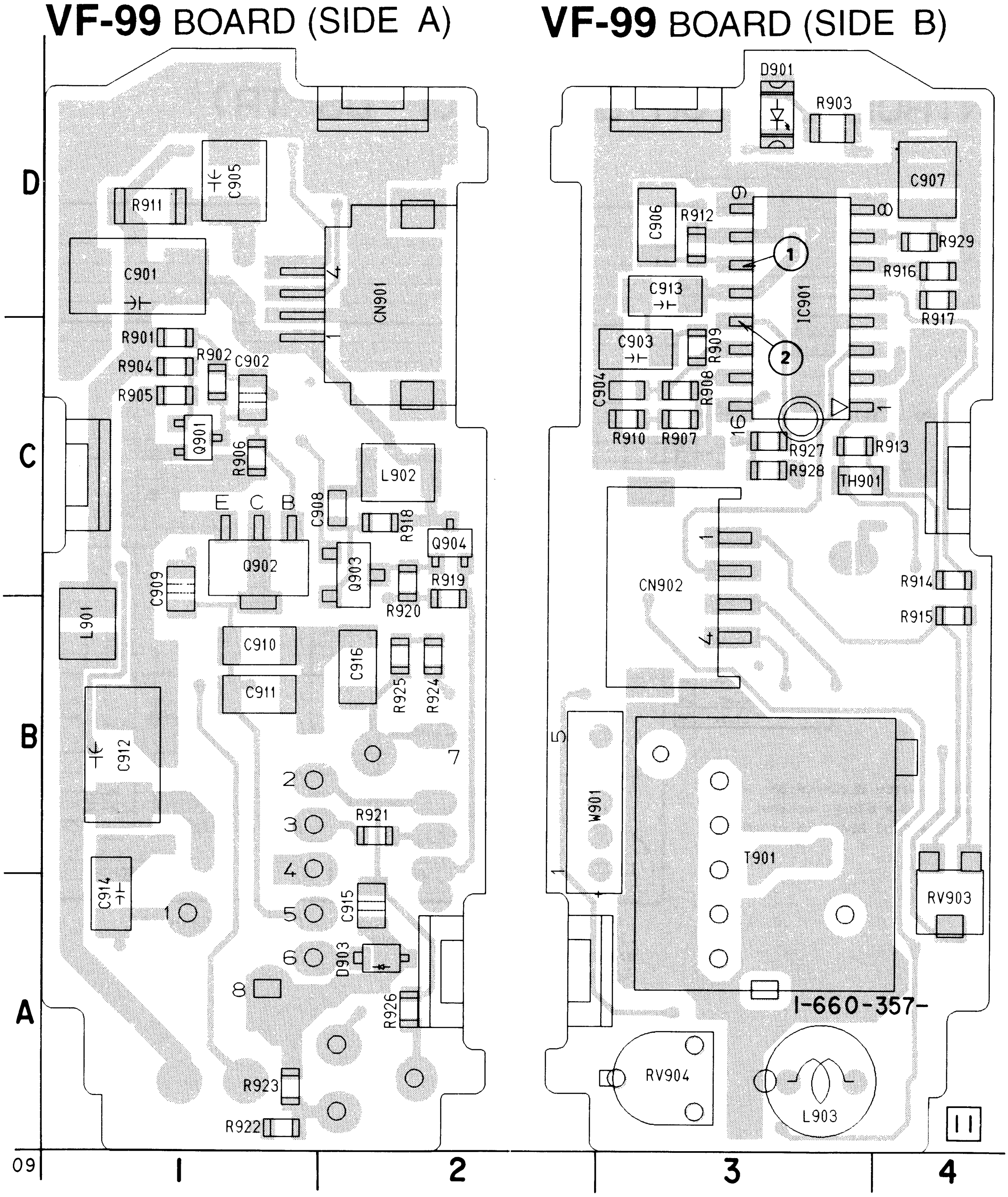
Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.


VF-99 BOARD
1
1Vp-p
H
IC901 (11) REC
2
2.5Vp-p
H
IC901 (13) REC


-112
OLOR EVF (COLOR EVF MODEL))
LB-50
BACK LIGHT (COLOR EVF MODEL)
VF-111
COLOR EVF (COLOR EVF MODEL)
MI-29
(STEREO MIC, LASER LINK)

VF-99 (B/W EVF (B/W EVF MODEL)) PRINTED WIRING BOARD

– Ref No. VF-99 BOARD: 1,000 series –

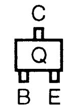

VF-99 BOARD (SIDE A)
VF-99 BOARD (SIDE B)
D
C
B
A
09
1
2
3
4
C901
C902
C905
C909
C910
C911
C912
C914
C915
C916
C908
CN901
R901
R902
R904
R905
R906
R911
R918
R919
R920
R921
R922
R923
R924
R925
R926
Q901
Q902
Q903
Q904
E C B
L901
L902
D903
D901
R903
C907
C906
C913
C903
C904
R912
R909
R908
R910
R907
R927
R928
R929
R916
R917
R913
R914
R915
IC901
TH901
CN902
W901
T901
RV903
RV904
L903
1-660-357-
11

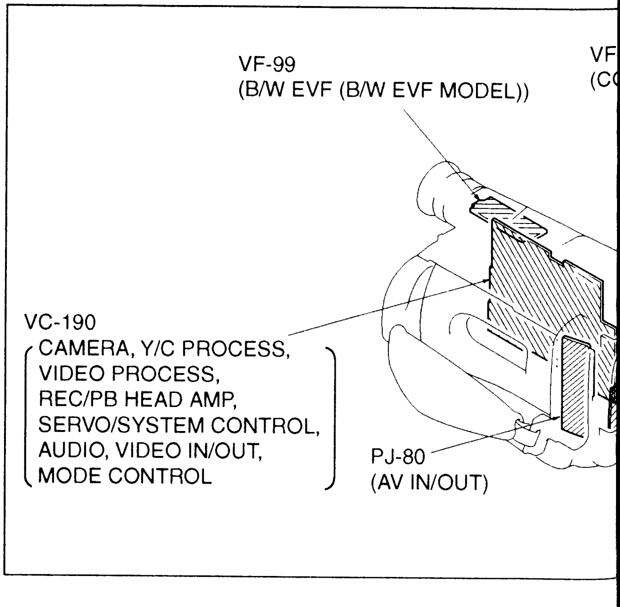
VF-99 BOARD	
C901	D-1
C902	C-1
C903	C-3
C904	C-3
C905	D-1
C906	D-3
C907	D-4
C908	C-2
C909	C-1
C910	B-1
C911	B-1
C912	B-1
C913	D-3
C914	A-1
C915	A-2
C916	B-2
CN901	D-2
CN902	C-3
D901	D-3
D903	A-2
IC901	D-3
L901	B-1
L902	C-2
L903	A-3
Q901	C-1
Q902	C-1
Q903	C-2
Q904	C-2
R901	C-1
R902	C-1
R903	D-3
R904	C-1
R905	C-1
R906	C-1
R907	C-3
R908	C-3
R909	C-3
R910	C-3
R911	D-1
R912	D-3
R913	C-3
R914	C-4
R915	B-4
R916	D-4
R917	D-4
R918	C-2
R919	C-2
R920	C-2
R921	B-2
R922	A-1
R923	A-1
R924	B-2
R925	B-2
R926	A-2
R927	C-3
R928	C-3
R929	D-4
RV903	A-4
RV904	A-3
T901	B-3
TH901	C-3
W901	B-3

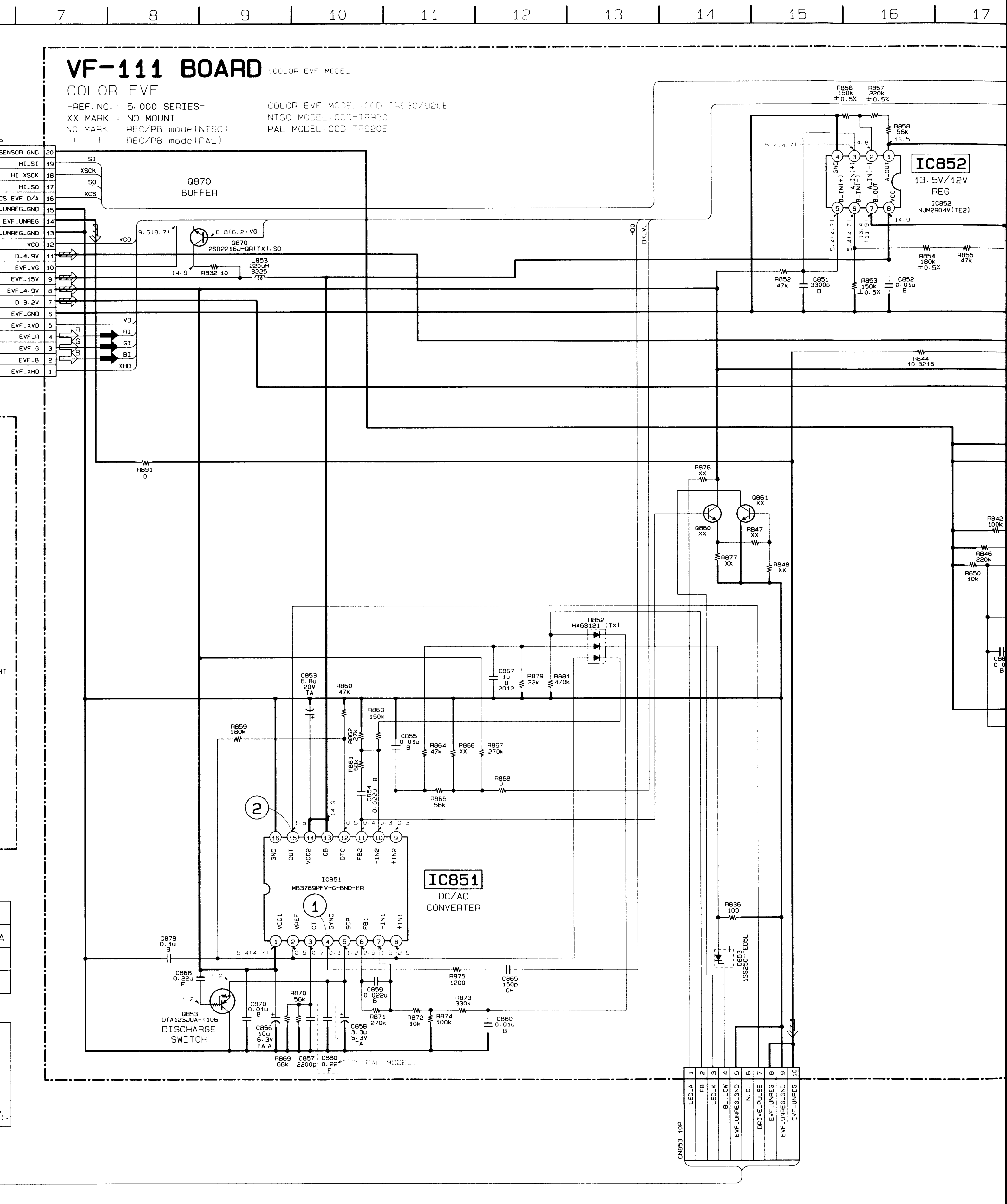
- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

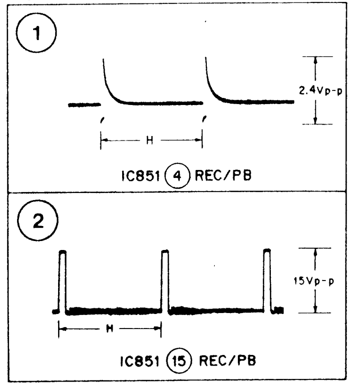
- Chip transistor

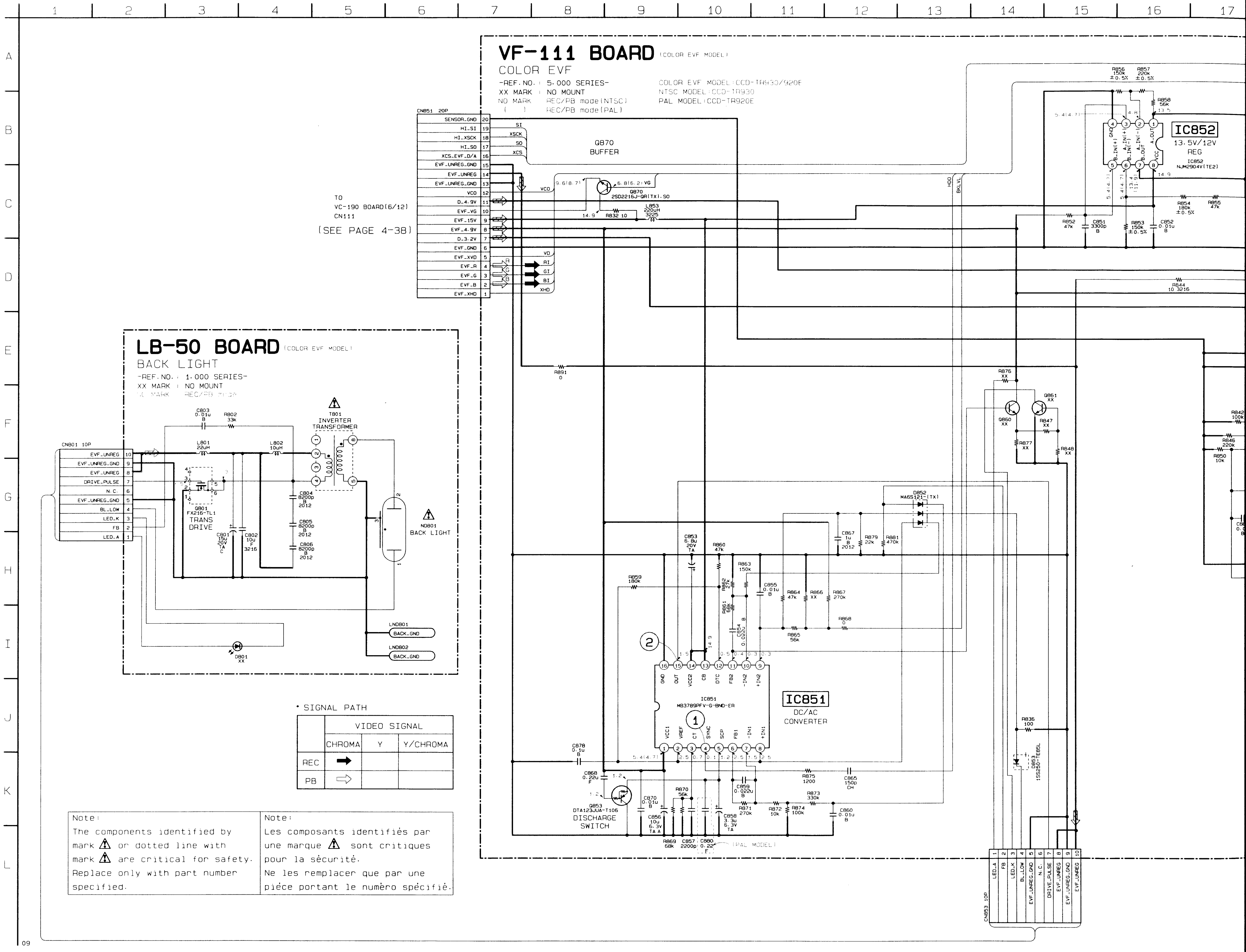



VF-99
(B/W EVF (B/W EVF MODEL))
VF
(C
VC-190
CAMERA, Y/C PROCESS,
VIDEO PROCESS,
REC/PB HEAD AMP,
SERVO/SYSTEM CONTROL,
AUDIO, VIDEO IN/OUT,
MODE CONTROL
PJ-80
(AV IN/OUT)


7
8
9
10
11
12
13
14
15
16
17
VF-111 BOARD (COLOR EVF MODEL)
COLOR EVF
-REF.NO.: 5,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode(NTSC)
( ) : REC/PB mode(PAL)
COLOR EVF MODEL:CCD-TR930/920E
NTSC MODEL:CCD-TR930
PAL MODEL:CCD-TR920E
SENSOR_GND 20
HI_SI 19
HI_XSCK 18
HI_SO 17
CS_EVF_D/A 16
UNREG_GND 15
EVF_UNREG 14
UNREG_GND 13
VCO 12
D_4.9V 11
EVF_VG 10
EVF_15V 9
EVF_4.9V 8
D_3.2V 7
EVF_GND 6
EVF_XVD 5
EVF_R 4
EVF_G 3
EVF_B 2
EVF_XHD 1
SI
XSCK
SO
XCS
VCO
VD
RI
GI
BI
XHD
Q870
BUFFER
Q870
2SD2216J-QR(TX).SO
9.6(8.7)
6.8(6.2) VG
14.9
R832 10
L853
220uH
3225
HDO
BKLVL
R891
0
IC852
13.5V/12V
REG
IC852
NJM2904V(TE2)
GND
B_IN(+)
A_IN(+)
B_IN(-)
A_IN(-)
B_OUT
A_OUT
VCC
R856
150k
±0.5%
R857
220k
±0.5%
R858
56k
13.5
5.4(4.7)
4.8
14.9
5.4(4.7)
5.4(4.7)
13.4
(11.9)
R854
180k
±0.5%
R855
47k
R852
47k
C851
3300p
B
R853
150k
±0.5%
C852
0.01u
B
R844
10 3216
R842
100k
R846
220k
R850
10k
R876
XX
Q861
XX
Q860
XX
R847
XX
R877
XX
R848
XX
D852
MA6S121-(TX)
C867
1u
B
2012
R879
22k
R881
470k
C853
6.8u
20V
TA
R850
47k
R863
150k
R859
180k
R862
27k
R861
68k
C855
0.01u
B
C854
0.022u
B
R864
47k
R866
XX
R867
270k
R868
0
R865
56k
②
①
1.5
14.9
0.5
0.4
0.3
0.3
GND
OUT
VCC2
CB
DTC
FB2
-IN2
+IN2
IC851
MB3789PFV-G-BND-ER
IC851
DC/AC
CONVERTER
VCC1
VREF
CT
SYNC
SCP
FB1
-IN1
+IN1
5.4(4.7)
2.5
0.7
0.1
1.2
2.5
1.5
2.5
C878
0.1u
B
C868
0.22u
F
1.2
1.2
Q853
DTA123JUA-T106
DISCHARGE
SWITCH
C870
0.01u
B
C856
10u
6.3V
TA A
R870
56k
R869
68k
C857
2200p
C880
0.22
F
(PAL MODEL)
C858
3.3u
6.3V
TA
C859
0.022u
B
R875
1200
C865
150p
CH
R873
330k
R871
270k
R872
10k
R874
100k
C860
0.01u
B
R836
100
D853
1SS250-TE85L
CN853 10P
1 LED_A
2 FB
3 LED_K
4 BL_LOW
5 EVF_UNREG_GND
6 N.C.
7 DRIVE_PULSE
8 EVF_UNREG
9 EVF_UNREG_GND
10 EVF_UNREG

VF-111 BOARD





VF-111 BOARD (COLOR EVF MODEL)
COLOR EVF
-REF. NO. : 5,000 SERIES-
XX MARK : NO MOUNT
NO MARK REC/PB mode(NTSC)
( ) REC/PB mode(PAL)
COLOR EVF MODEL: CCD-TR930/920E
NTSC MODEL: CCD-TR930
PAL MODEL: CCD-TR920E
CN851 20P
SENSOR_GND
HI_SI
HI_XSCK
HI_SO
XCS_EVF_D/A
EVF_UNREG_GND
EVF_UNREG
VCO
D_4.9V
EVF_VG
EVF_15V
EVF_4.9V
D_3.2V
EVF_GND
EVF_XVD
EVF_R
EVF_G
EVF_B
EVF_XHD
TO VC-190 BOARD(6/12) CN111
(SEE PAGE 4-38)
Q870 BUFFER
Q870 2SD2216J-QR(TX).SO
L853 220uH 3225
IC852 13.5V/12V REG
IC852 NJM2904V(TE2)
IC851 MB3789PFV-G-BND-ER
IC851 DC/AC CONVERTER
D852 MA6S121-(TX)
Q853 DTA123JUA-T105 DISCHARGE SWITCH
CN853 10P
LED_A
FB
LED_K
BL_LOW
EVF_UNREG_GND
N.C.
DRIVE_PULSE
EVF_UNREG_GND
EVF_UNREG
LB-50 BOARD (COLOR EVF MODEL)
BACK LIGHT
-REF. NO. : 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK REC/PB mode
CN801 10P
T801 INVERTER TRANSFORMER
Q801 FX216-TL1 TRANS DRIVE
ND801 BACK LIGHT
LND801 BACK_GND
LND802 BACK_GND
D801 XX
(PAL MODEL)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A B C D E F G H I J K L
09

• SIGNAL PATH

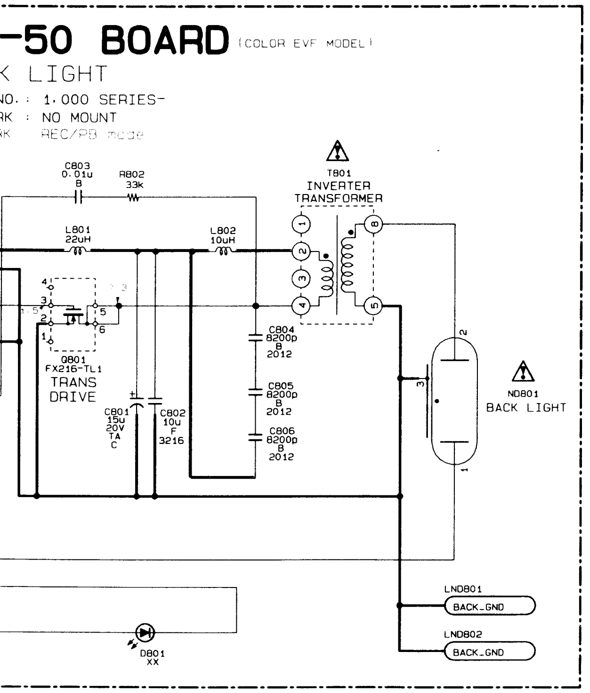
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		
PB	⇨		

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

-50 BOARD (COLOR EVF MODEL)

K LIGHT

NO. : 1.000 SERIES-
RK : NO MOUNT
RK REC/PB mode

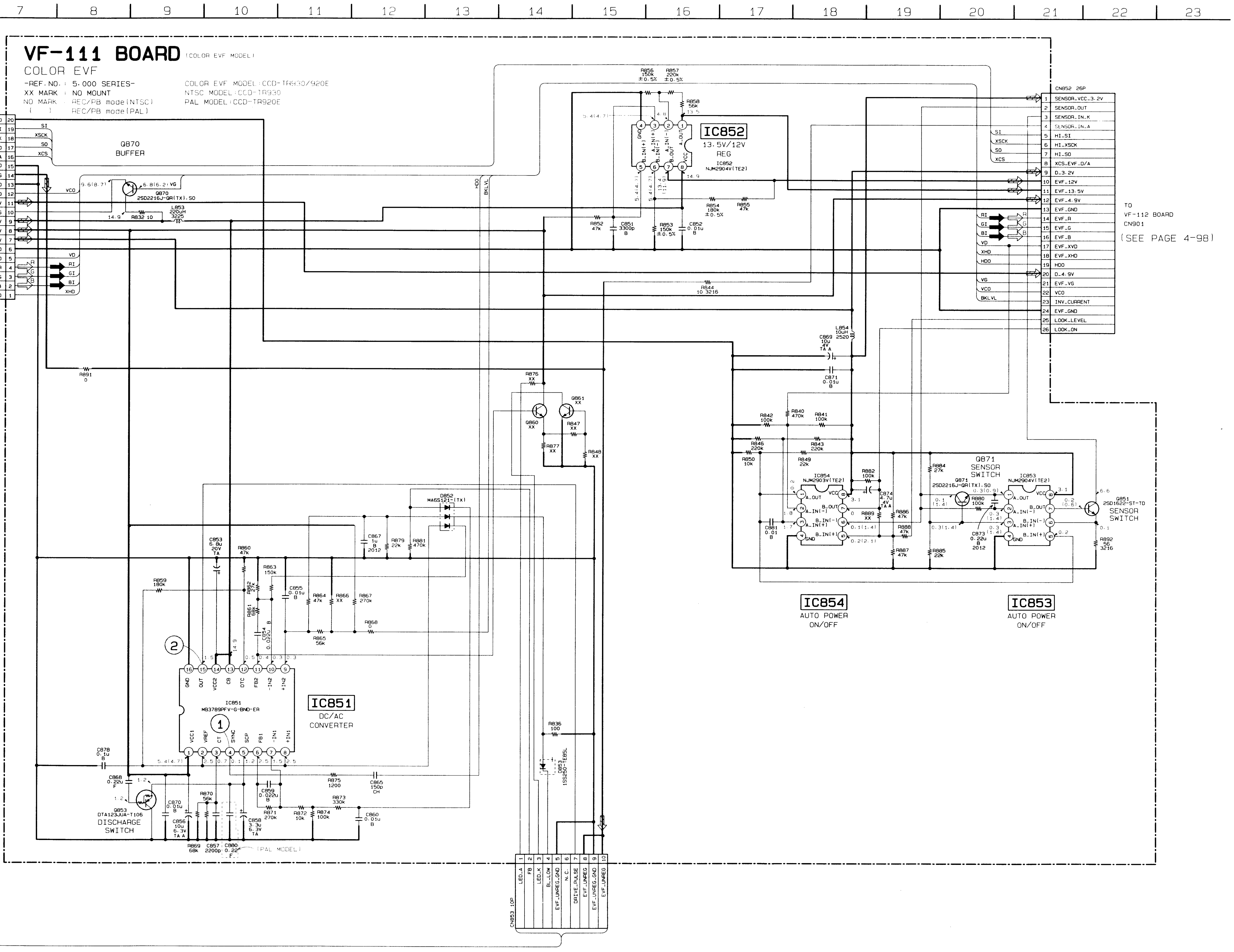

C803
0.01u
B
R802
33k
T801
INVERTER
TRANSFORMER
L801
22uH
L802
10uH
Q801
FX216-TL1
TRANS
DRIVE
C801
15u
20V
TA
C
C802
10u
F
3216
C804
8200p
B
2012
C805
8200p
B
2012
C806
8200p
B
2012
ND801
BACK LIGHT
LND801
BACK_GND
LND802
BACK_GND
D801
XX

VF-111 BOARD (COLOR EVF MODEL)

COLOR EVF

-REF.NO. : 5.000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode(NTSC)
( ) REC/PB mode(PAL)

COLOR EVF MODEL:CCD-TR930/920E
NTSC MODEL:CCD-TR930
PAL MODEL:CCD-TR920E


3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
CN851 20P
SENSOR_GND 20
HI_SI 19
HI_XSCK 18
HI_SO 17
XCS_EVF_D/A 16
EVF_UNREG_GND 15
EVF_UNREG 14
EVF_UNREG_GND 13
VCO 12
D_4.9V 11
EVF_VG 10
EVF_15V 9
EVF_4.9V 8
D_3.2V 7
EVF_GND 6
EVF_XVD 5
EVF_R 4
EVF_G 3
EVF_B 2
EVF_XHD 1
TO
VC-190 BOARD(6/12)
CN111
(SEE PAGE 4-38)
SI
XSCK
SO
XCS
VD
RI
GI
BI
XHD
Q870
BUFFER
VCO
9.6(8.7)
6.8(6.2) VG
Q870
2SD2216J-QR(TX).SO
14.9
R832 10
L853
220uH
3225
HDO
BKLVL
R856
150k
±0.5%
R857
220k
±0.5%
R858
56k
IC852
13.5V/12V
REG
IC852
NJM2904V(TE2)
R852
47k
C851
3300p
B
R853
150k
±0.5%
C852
0.01u
B
R854
180k
±0.5%
R855
47k
R844
10 3216
CN852 26P
1 SENSOR_VCC_3.2V
2 SENSOR_OUT
3 SENSOR_IN_K
4 SENSOR_IN_A
5 HI_SI
6 HI_XSCK
7 HI_SO
8 XCS_EVF_D/A
9 D_3.2V
10 EVF_12V
11 EVF_13.5V
12 EVF_4.9V
13 EVF_GND
14 EVF_R
15 EVF_G
16 EVF_B
17 EVF_XVD
18 EVF_XHD
19 HDO
20 D_4.9V
21 EVF_VG
22 VCO
23 INV_CURRENT
24 EVF_GND
25 LOOK_LEVEL
26 LOOK_ON
TO
VF-112 BOARD
CN901
(SEE PAGE 4-98)
L854
10uH
2520
C869
10u
4V
TA A
C871
0.01u
B
R891
0
R876
XX
Q860
XX
Q861
XX
R847
XX
R877
XX
R848
XX
R842
100k
R840
470k
R841
100k
R846
220k
R843
220k
R850
10k
R849
22k
R882
100k
C874
4.7u
4V
TA A
R889
XX
R886
47k
R888
47k
R887
47k
R885
22k
R884
27k
Q871
SENSOR
SWITCH
Q871
2SD2216J-QR(TX).SO
R880
100k
C873
0.22u
B
2012
C881
0.01
B
IC854
NJM2903V(TE2)
IC853
NJM2904V(TE2)
A_OUT
A_IN(-)
A_IN(+)
B_OUT
B_IN(-)
B_IN(+)
VCC
GND
Q851
2SD1622-ST-TD
SENSOR
SWITCH
R892
56
3216
IC854
AUTO POWER
ON/OFF
IC853
AUTO POWER
ON/OFF
D852
MA6S121-(TX)
C867
1u
B
2012
R879
22k
R881
470k
C853
6.8u
20V
TA
R860
47k
R863
150k
R862
47k
R861
68k
C854
0.022u
C855
0.01u
B
R864
47k
R866
XX
R867
270k
R865
56k
R868
0
R859
180k
②
IC851
MB3789PFV-G-BND-ER
①
GND
OUT
VCC2
CB
DTC
FB2
-IN2
+IN2
VCC1
VREF
CT
SYNC
SCP
FB1
-IN1
+IN1
IC851
DC/AC
CONVERTER
C878
0.1u
B
C868
0.22u
F
Q853
DTA123JUA-T106
DISCHARGE
SWITCH
C870
0.01u
B
C856
10u
6.3V
TA A
R870
56k
R869
68k
C857
2200p
C880
0.22
F
(PAL MODEL)
C858
3.3u
6.3V
TA
C859
0.022u
B
R871
270k
R872
10k
R874
100k
R873
330k
R875
1200
C865
150p
CH
C860
0.01u
B
R836
100
D853
1SS250-TE85L
CN853 10P
LED_A 1
FB 2
LED_K 3
BL_LOW 4
EVF_UNREG_GND 5
N.C. 6
DRIVE_PULSE 7
EVF_UNREG 8
EVF_UNREG_GND 9
EVF_UNREG 10

• SIGNAL PATH

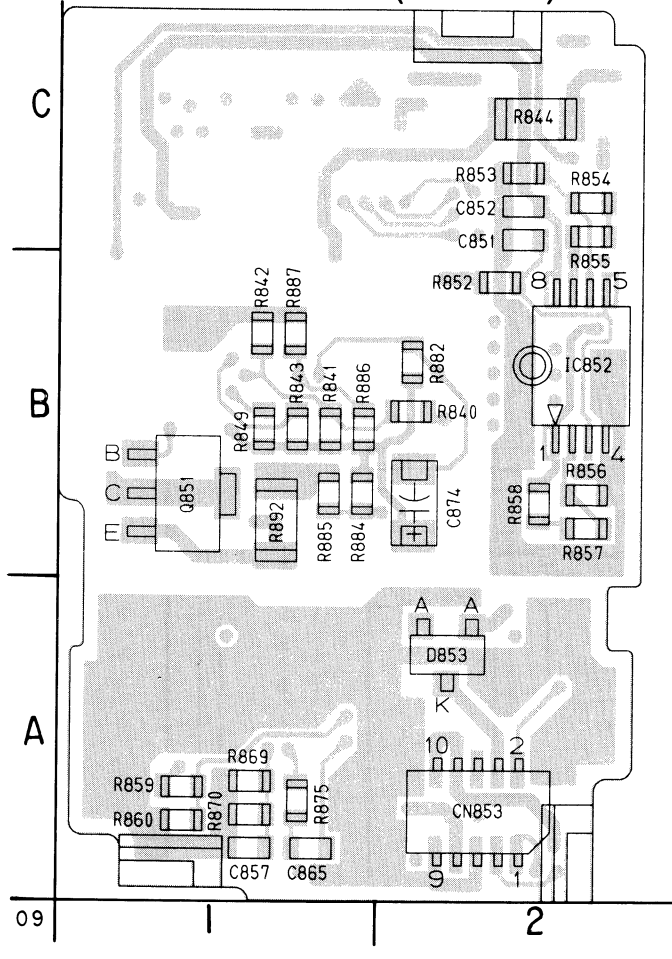
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		
PB	⇨		

	Note:
dentified by	Les composants identifiés par
d line with	une marque ⚠ sont critiques
ical for safety.	pour la sécurité.
n part number	Ne les remplacer que par une
	pièce portant le numèro spécifiè.

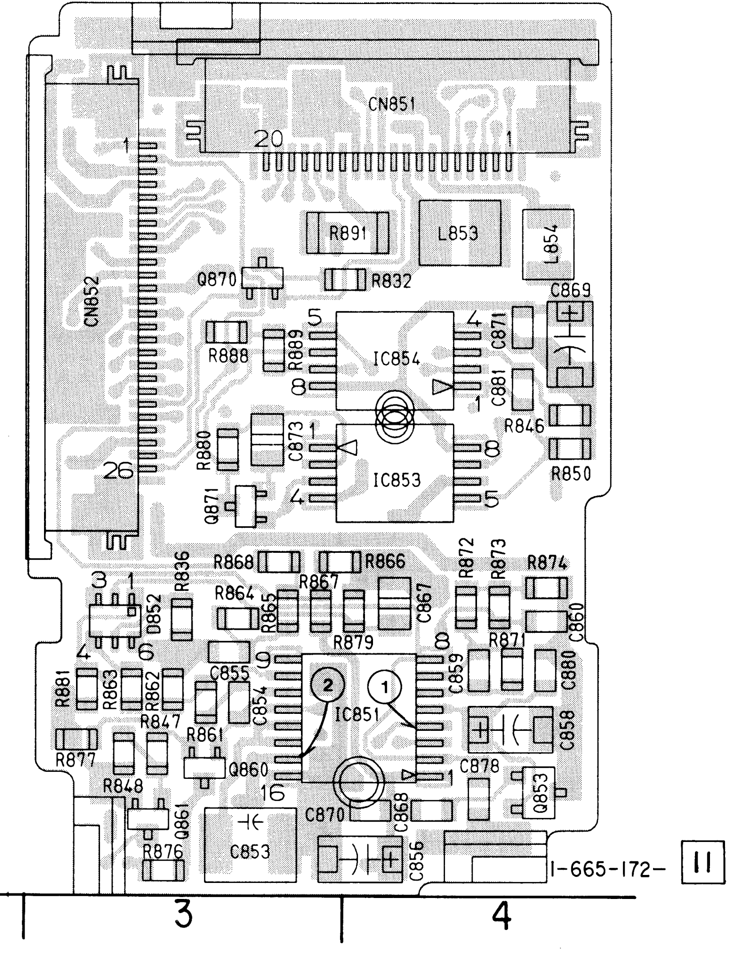
VF-111 (COLOR EVF (COLOR EVF MODEL)), LB-50 (BACK LIGHT) PRINTED WIRING BOARDS

– Ref No. VF-111 BOARD: 5,000 series, LB-50 BOARD: 1,000 series –

VF-111 BOARD (SIDE B)

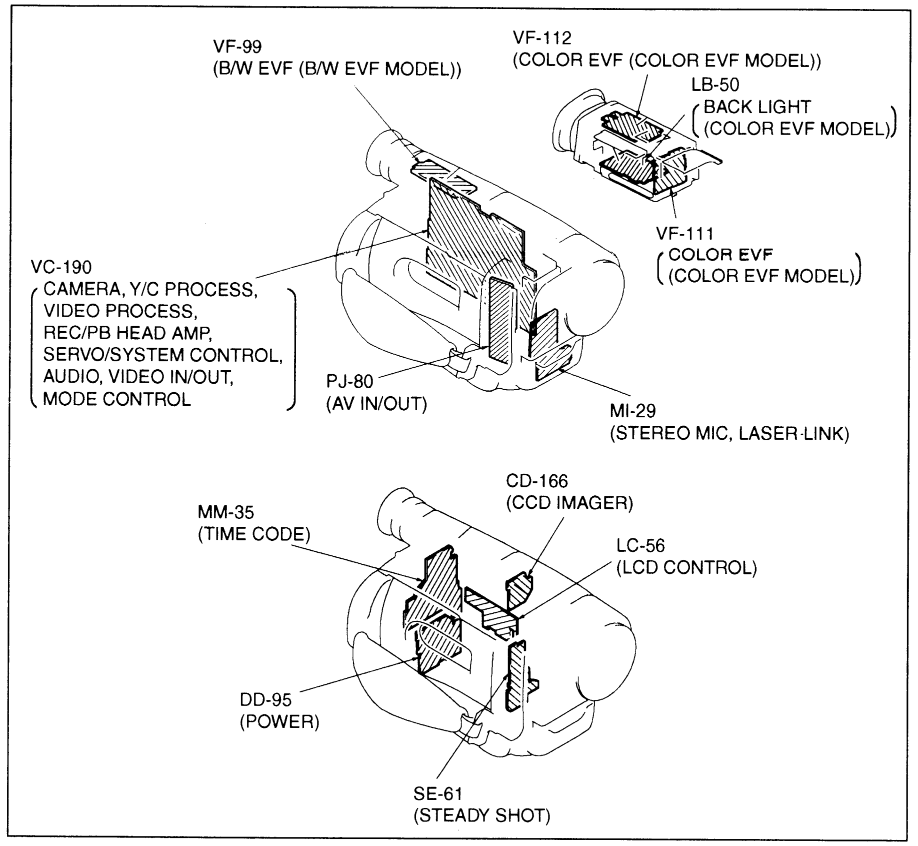

C
B
A
09
1
2
R844
R853
R854
C852
C851
R855
R852
IC852
R842
R887
R843
R841
R886
R882
R840
R849
B
C
E
Q851
R892
R885
R884
C874
R858
R856
R857
D853
A
K
R869
R859
R860
R870
R875
CN853
10
2
9
1
C857
C865

VF-111 BOARD (SIDE A)


CN851
20
1
CN852
26
R891
L853
L854
Q870
R832
C869
IC854
C871
C881
R888
R889
R846
R880
C873
IC853
R850
Q871
R868
R866
R874
R836
R867
R872
R873
D852
R864
R865
C867
C860
R879
R871
R881
R863
R862
C855
C854
IC851
C859
C880
C858
R847
R861
R877
Q860
C878
Q853
R848
C870
C868
R876
Q861
C853
C856
1-665-172-
11
3
4

VF-111 BOARD

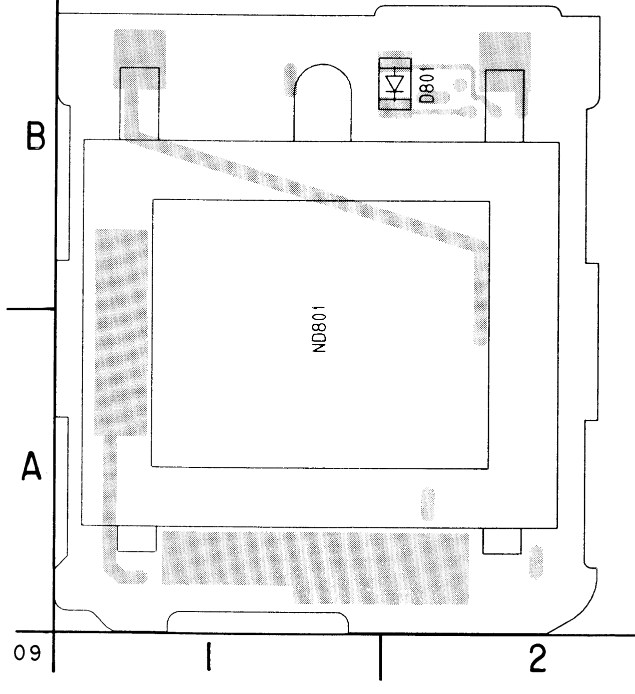
C851	C-2	R841	B-1
C852	C-2	R842	B-1
C853	A-3	R843	B-1
C854	A-3	R844	C-2
C855	A-3	R846	B-4
C856	A-4	R847	A-3
C857	A-1	R848	A-3
C858	A-4	R849	B-1
C859	A-4	R850	B-4
C860	A-4	R852	B-2
C865	A-1	R853	C-2
C867	A-4	R854	C-2
C868	A-4	R855	C-2
C869	B-4	R856	B-2
C870	A-4	R857	B-2
C871	B-4	R858	B-2
C873	B-3	R859	A-1
C874	B-2	R860	A-1
C878	A-4	R861	A-3
C880	A-4	R862	A-3
C881	B-4	R863	A-3
		R864	A-3
CN851	C-4	R865	A-3
CN852	B-3	R866	B-3
CN853	A-2	R867	A-3
		R868	B-3
D852	A-3	R869	A-1
D853	A-2	R870	A-1
		R871	A-4
IC851	A-3	R872	A-4
IC852	B-2	R873	A-4
IC853	B-4	R874	A-4
IC854	B-4	R875	A-1
		R876	A-3
L853	C-4	R877	A-3
L854	C-4	R879	A-4
		R880	B-3
Q851	B-1	R881	A-3
Q853	A-4	R882	B-2
Q860	A-3	R884	B-1
Q861	A-3	R885	B-1
Q870	B-3	R886	B-1
Q871	B-3	R887	B-1
		R888	B-3
R832	B-3	R889	B-3
R836	A-3	R891	C-3
R840	B-2	R892	B-1


VF-99
(B/W EVF (B/W EVF MODEL))
VF-112
(COLOR EVF (COLOR EVF MODEL))
LB-50
(BACK LIGHT
(COLOR EVF MODEL))
VF-111
(COLOR EVF
(COLOR EVF MODEL))
VC-190
CAMERA, Y/C PROCESS,
VIDEO PROCESS,
REC/PB HEAD AMP,
SERVO/SYSTEM CONTROL,
AUDIO, VIDEO IN/OUT,
MODE CONTROL
PJ-80
(AV IN/OUT)
MI-29
(STEREO MIC, LASER LINK)
MM-35
(TIME CODE)
CD-166
(CCD IMAGER)
LC-56
(LCD CONTROL)
DD-95
(POWER)
SE-61
(STEADY SHOT)

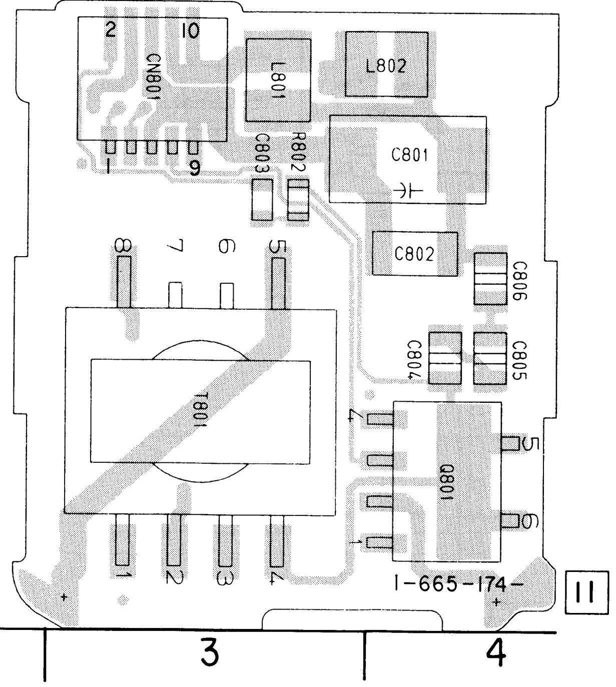
LB-50 (BACK LIGHT) PRINTED WIRING BOARD

– Ref No. LB-50 BOARD: 1,000 series –

LB-50 BOARD (SIDE B)


B
A
D801
ND801
09
1
2

LB-50 BOARD (SIDE A)


2
10
CN801
1
9
L801
L802
C803
R802
C801
C802
C806
C804
C805
8
7
6
5
T801
Q801
1
2
3
4
1-665-174-
11
3
4

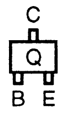
LB-50 BOARD

C801	B-4
C802	B-4
C803	B-3
C804	A-4
C805	A-4
C806	B-4
CN801	B-3
D801	B-2
L801	B-3
L802	B-4
ND801	A-1
Q801	A-4
R802	B-3
T801	A-3

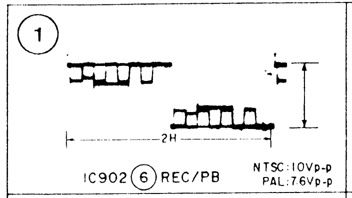
- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

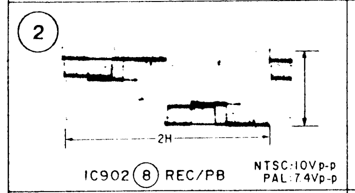
- Chip transistor



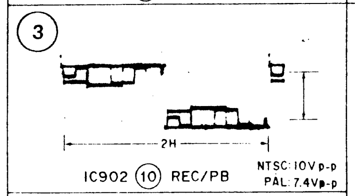
VF-112 BOARD



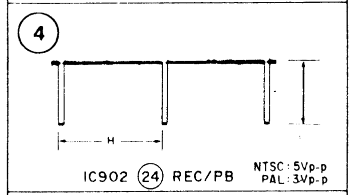
IC902 ⑥ REC/PB



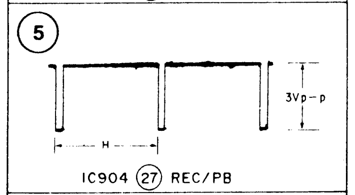
IC902 ⑧ REC/PB



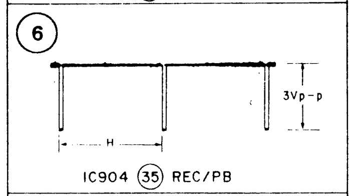
IC902 ⑩ REC/PB



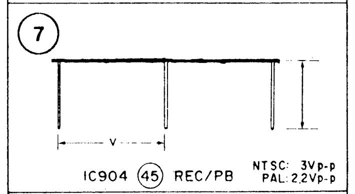
IC902 ㉔ REC/PB



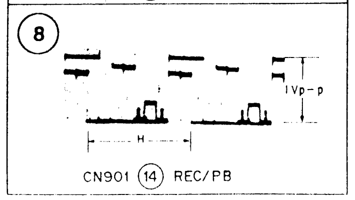
IC904 ㉗ REC/PB



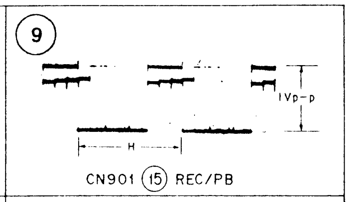
IC904 ㉟ REC/PB



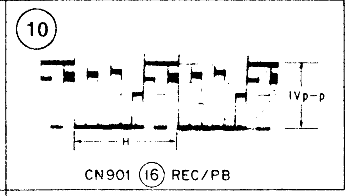
IC904 ㊺ REC/PB



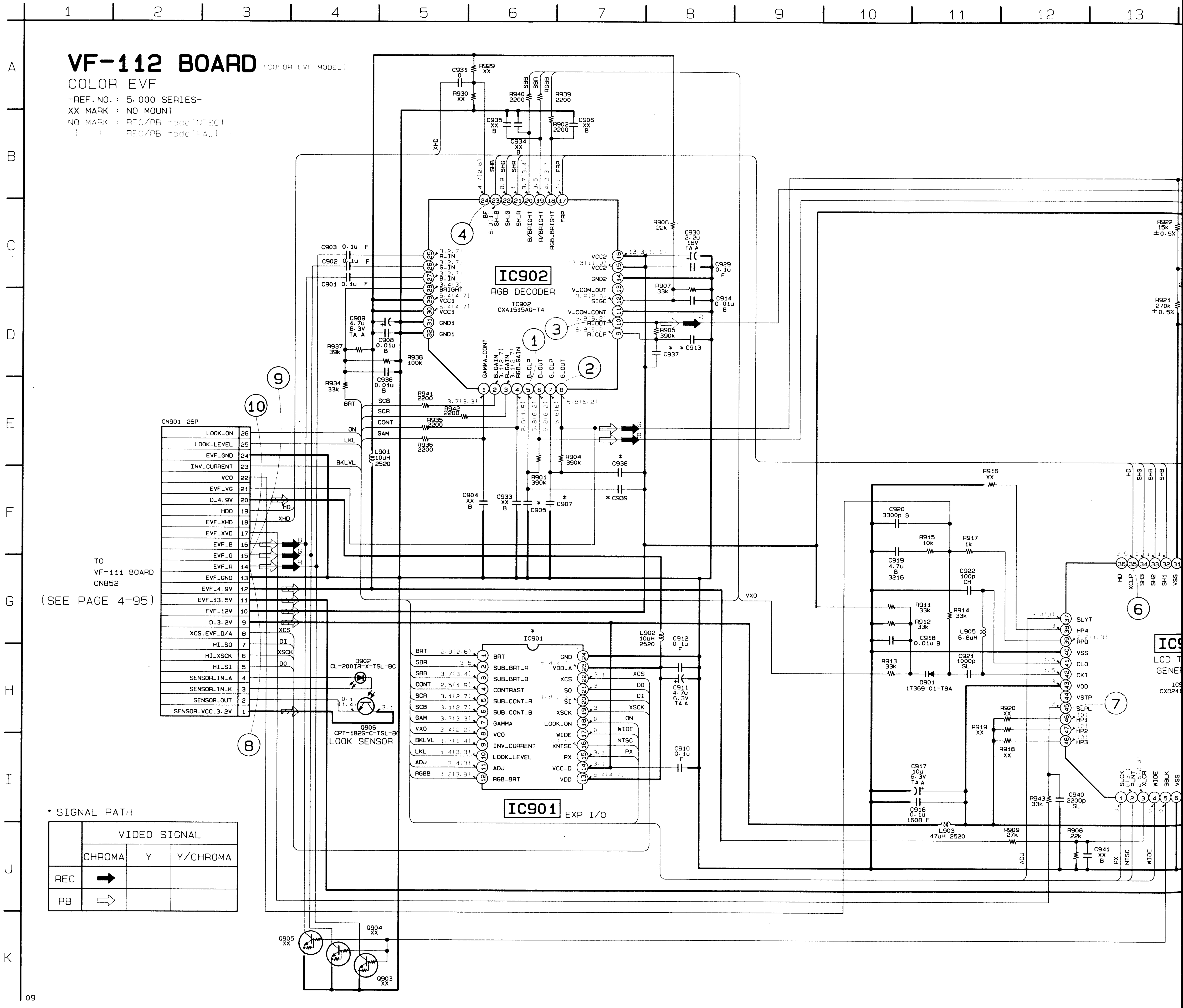
CN901 ⑭ REC/PB



CN901 ⑮ REC/PB



CN901 ⑯ REC/PB


1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
I
J
K
IC902
RGB DECODER
IC902
CXA1515AQ-T4
R_IN
G_IN
B_IN
BRIGHT
VCC1
GND1
VCC2
GND2
V_COM_OUT
SIGC
V_COM_CONT
R_OUT
R_CLP
GAMMA_CONT
B_GAIN
R_GAIN
RGB_GAIN
B_CLP
B_OUT
G_CLP
G_OUT
BF
SH_B
SH_G
SH_R
B/BRIGHT
R/BRIGHT
RGB_BRIGHT
FRP
IC901
EXP I/O
BAT
SUB_BAT_R
SUB_BAT_B
CONTRAST
SUB_CONT_R
SUB_CONT_B
GAMMA
VCO
INV_CURRENT
LOOK_LEVEL
ADJ
RGB_BAT
GND
VDD_A
XCS
SO
SI
XSCK
LOOK_ON
WIDE
XNTSC
PX
VCC_D
VDD
CN901 26P
LOOK_ON
LOOK_LEVEL
EVF_GND
INV_CURRENT
VCO
EVF_VG
D_4.9V
HDO
EVF_XHD
EVF_XVD
EVF_B
EVF_G
EVF_R
EVF_GND
EVF_4.9V
EVF_13.5V
EVF_12V
D_3.2V
XCS_EVF_D/A
HI_SO
HI_XSCK
HI_SI
SENSOR_IN_A
SENSOR_IN_K
SENSOR_OUT
SENSOR_VCC_3.2V
TO
VF-111 BOARD
CN852
(SEE PAGE 4-95)
D902
CL-200IR-X-TSL-BC
Q906
CPT-182S-C-TSL-B
LOOK SENSOR
Q905
XX
Q904
XX
Q903
XX
D901
1T369-01-T8A
L901
10uH
2520
L902
10uH
2520
L903
47uH 2520
L905
6.8uH
IC
LCD T
GENER
CXD24
SLYT
HP4
RPD
VSS
CLO
CKI
VDD
VSTP
SLPL
HP1
HP2
HP3
HD
XCLP
SH3
SH2
SH1
VSS
SLCK
XLCR
SBLK
NTSC
WIDE
PX
ADJ
VXO
XHD
R922
15k
±0.5%
R921
270k
±0.5%
09

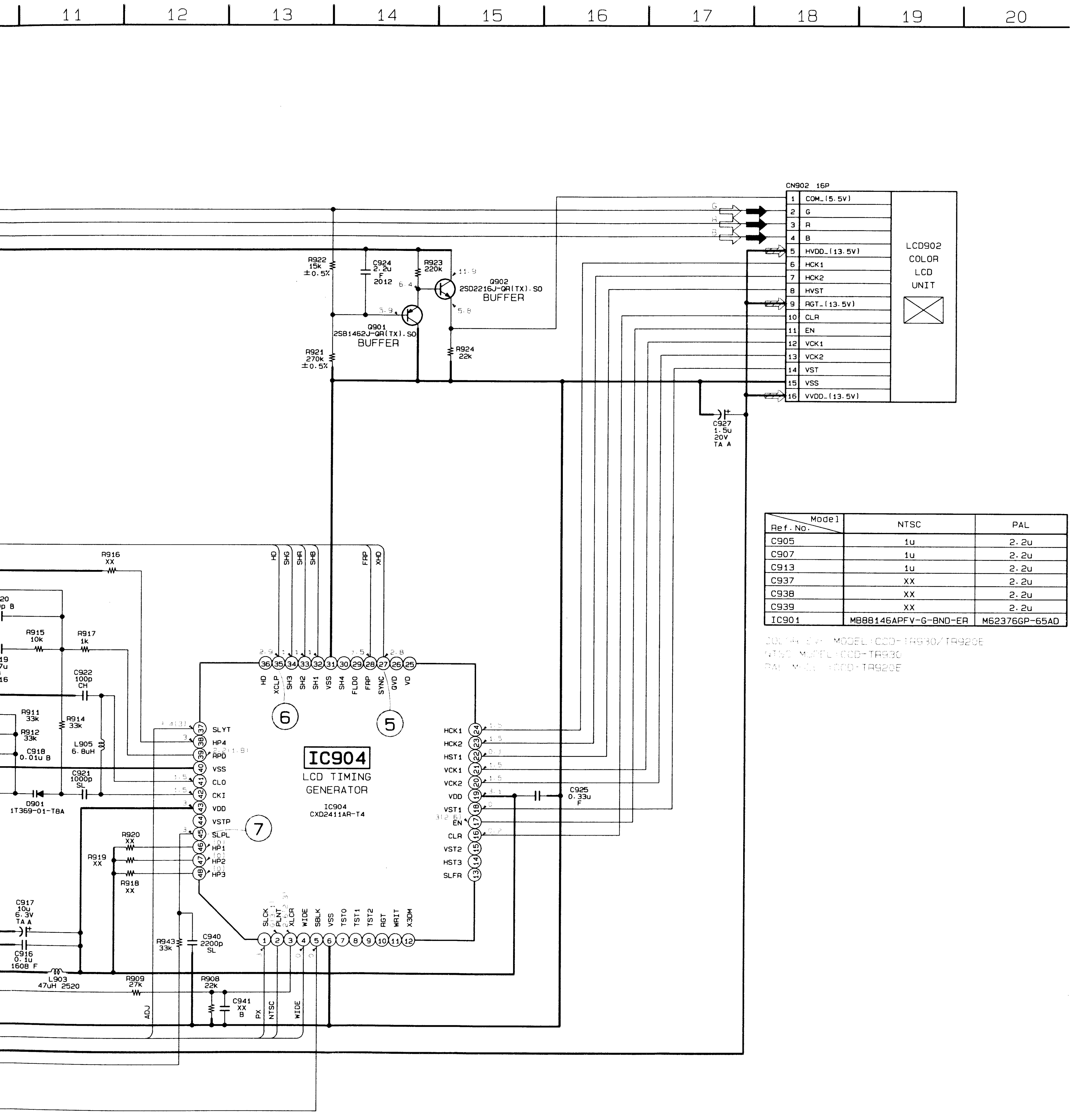
VF-112 BOARD (COLOR EVF MODEL)

COLOR EVF

-REF.NO.: 5,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode(NTSC)
( ) : REC/PB mode(PAL)

• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		
PB	⇨		

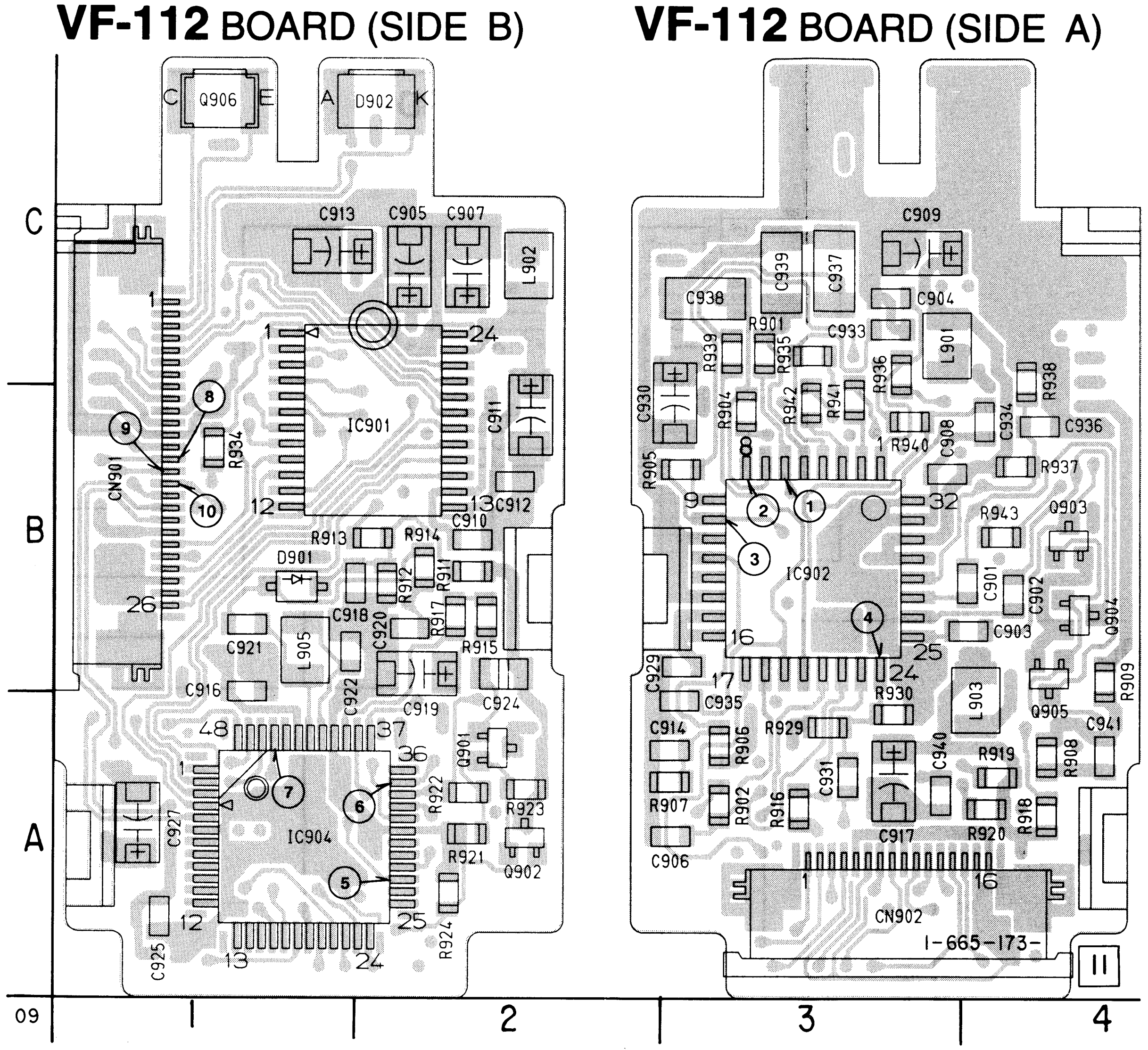

11
12
13
14
15
16
17
18
19
20
CN902 16P
COM_(5.5V)
G
R
B
HVDD_(13.5V)
HCK1
HCK2
HVST
RGT_(13.5V)
CLR
EN
VCK1
VCK2
VST
VSS
VVDD_(13.5V)
LCD902
COLOR
LCD
UNIT
R922
15k
±0.5%
C924
2.2u
F
2012
R923
220k
Q902
2SD2216J-QR(TX).SO
BUFFER
Q901
2SB1462J-QR(TX).SO
BUFFER
R921
270k
±0.5%
R924
22k
C927
1.5u
20V
TA A
R916
XX
R915
10k
R917
1k
C922
100p
CH
R911
33k
R914
33k
R912
33k
C918
0.01u B
L905
6.8uH
C921
1000p
SL
D901
1T369-01-T8A
R920
XX
R919
XX
R918
XX
C917
10u
6.3V
TA A
C916
0.1u
1608 F
L903
47uH 2520
R909
27K
R943
33k
C940
2200p
SL
R908
22k
C941
XX
B
IC904
LCD TIMING
GENERATOR
IC904
CXD2411AR-T4
C925
0.33u
F
HD
SHG
SHR
SHB
FRP
XHD
XCLP
SH3
SH2
SH1
VSS
SH4
FLDO
FRP
SYNC
OVD
VD
SLYT
HP4
RPD
VSS
CLO
CKI
VDD
VSTP
SLPL
HP1
HP2
HP3
HCK1
HCK2
HST1
VCK1
VCK2
VDD
VST1
EN
CLR
VST2
HST3
SLFR
SLCK
PLNT
XLCR
WIDE
SBLK
VSS
TST0
TST1
TST2
RGT
WAIT
X30M
ADJ
PX
NTSC
WIDE
⑤
⑥
⑦

Model Ref. No.	NTSC	PAL
C905	1u	2.2u
C907	1u	2.2u
C913	1u	2.2u
C937	XX	2.2u
C938	XX	2.2u
C939	XX	2.2u
IC901	MB88146APFV-G-BND-ER	M62376GP-65AD

COLOR EVF MODEL : CCD-TR930/TR920E
NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR920E

VF-112 (COLOR EVF (COLOR EVF MODEL) PRINTED WIRING BOARD

– Ref No. VF-112 BOARD: 5,000 series –


VF-112 BOARD (SIDE B)
VF-112 BOARD (SIDE A)
C
B
A
09
1
2
3
4
Q906
D902
C913
C905
C907
L902
IC901
C911
CN901
C912
C910
R913
R914
D901
C918
C921
L905
C922
C916
C919
C924
R915
IC904
Q901
R922
R923
R921
Q902
R924
C925
C927
C909
C938
C939
C937
C904
R901
C933
L901
R939
R935
R936
R938
C930
R904
R942
R941
R940
C908
C934
C936
R937
R905
IC902
R943
Q903
C901
C902
C903
Q904
C929
C935
R930
L903
Q905
R909
C914
R906
R929
C941
R908
R907
R902
R916
C931
C940
R919
R918
C906
C917
R920
CN902
1-665-173-
11

VF-112
C901
C902
C903
C904
C905
C906
C907
C908
C909
C910
C911
C912
C913
C914
C916
C917
C918
C919
C920
C921
C922
C924
C925
C927
C929
C930
C931
C933
C934
C935
C936
C937
C938
C939
C940
C941

CN901
CN902

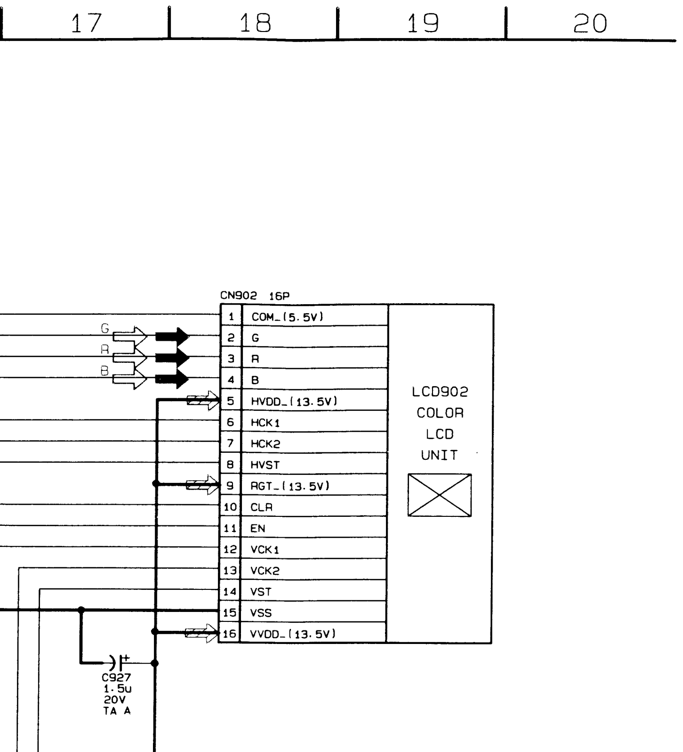
D901
D902

IC901
IC902
IC904

L901
L902
L903
L905

Q901
Q902
Q903
Q904
Q906

R901
R902
R904
R905
R906
R907
R908
R911
R912
R913
R914
R915
R916
R917
R918
R919
R920
R921
R922
R923
R924
R929
R930
R934
R935
R936
R937
R938
R939
R940
R941
R942
R943


17
18
19
20
CN902 16P
1 COM_(5.5V)
2 G
3 R
4 B
5 HVDD_(13.5V)
6 HCK1
7 HCK2
8 HVST
9 RGT_(13.5V)
10 CLR
11 EN
12 VCK1
13 VCK2
14 VST
15 VSS
16 VVDD_(13.5V)
LCD902
COLOR
LCD
UNIT
G
R
B
C927
1.5u
20V
TA A

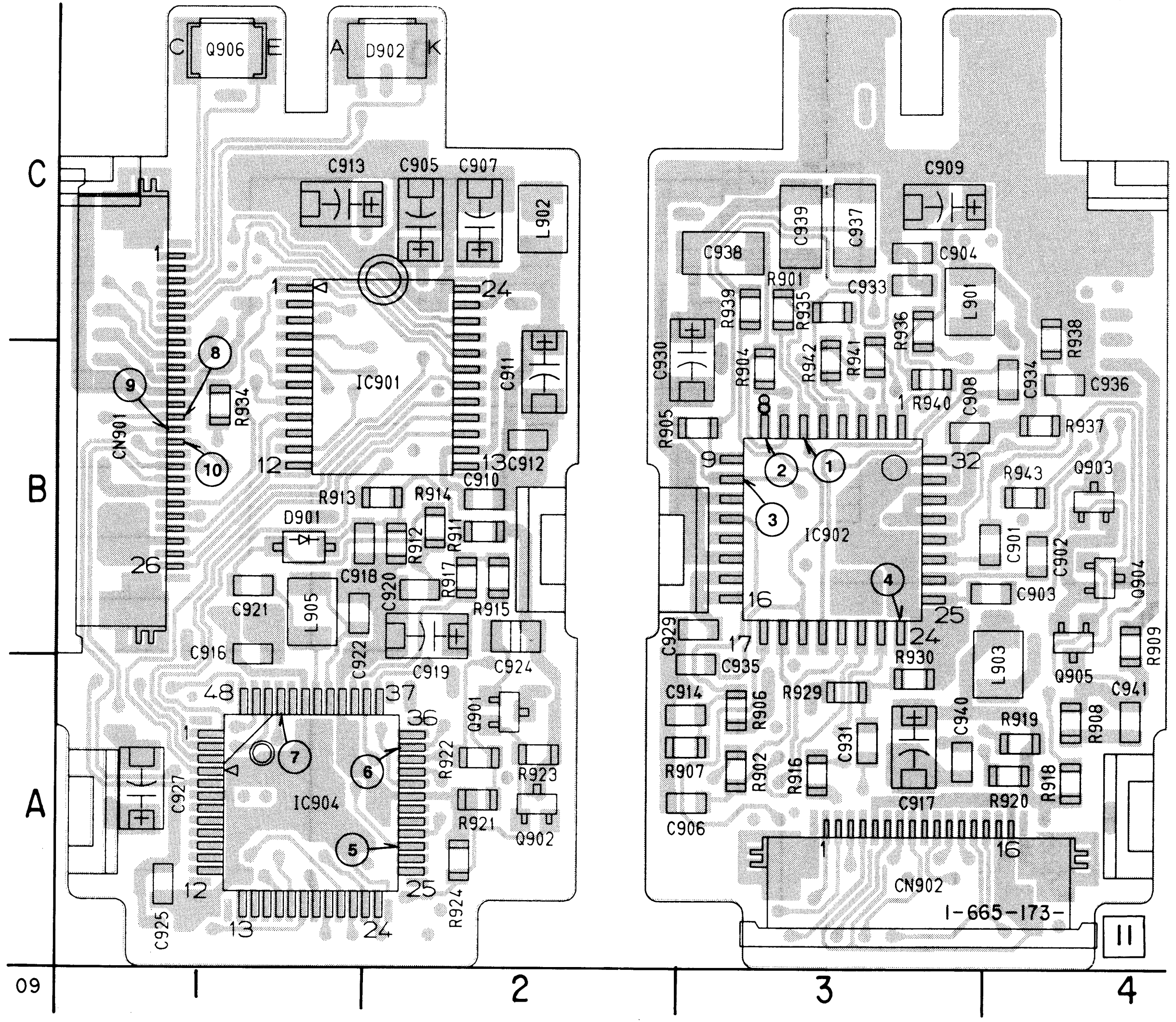
Model / Ref. No.	NTSC	PAL
C905	1u	2.2u
C907	1u	2.2u
C913	1u	2.2u
C937	XX	2.2u
C938	XX	2.2u
C939	XX	2.2u
IC901	MB88146APFV-G-BND-ER	M62376GP-65AD

COLOR EVF MODEL : CCD-TR930/TR920E
NTSC MODEL : CCD-TR930
PAL MODEL : CCD-TR920E

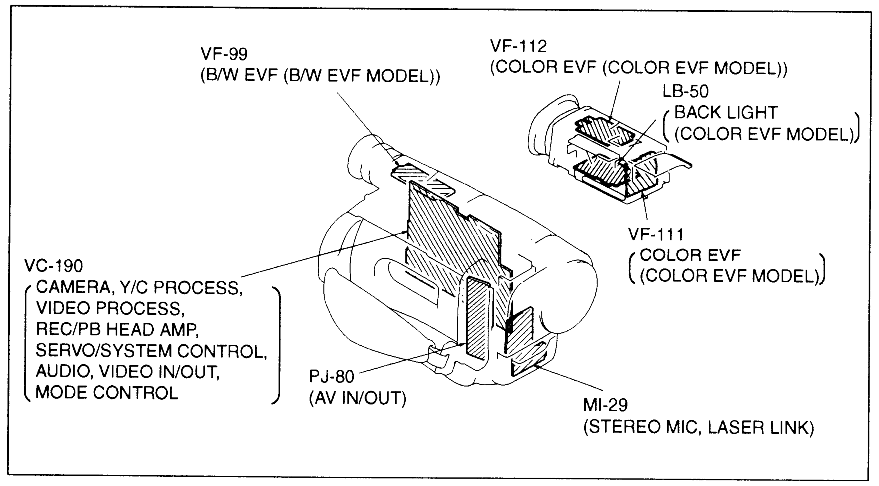
VF-112 (COLOR EVF (COLOR EVF MODEL) PRINTED WIRING BOARD

– Ref No. VF-112 BOARD: 5,000 series –

VF-112 BOARD (SIDE B)　　VF-112 BOARD (SIDE A)


C
B
A
09
1
2
3
4
Q906
D902
C913
C905
C907
L902
IC901
C911
C912
C910
R934
CN901
R913
R914
D901
R912
R911
C918
C920
R917
R915
C921
L905
C916
C922
C919
C924
IC904
C927
Q901
R922
R923
R921
Q902
C925
R924
C909
C938
C939
C937
C904
R901
R939
R935
C933
L901
R936
R938
C930
R904
R942
R941
R940
C908
C934
C936
R937
R905
IC902
R943
Q903
C901
C902
C903
Q904
C929
C935
R930
L903
Q905
R909
C941
C914
R929
R906
C931
C940
R919
R908
R907
R902
R916
C917
R920
R918
C906
CN902
1-665-173-
11

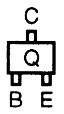
VF-112 BOARD	
C901	B-4
C902	B-4
C903	B-4
C904	C-3
C905	C-2
C906	A-3
C907	C-2
C908	B-3
C909	C-3
C910	B-2
C911	B-2
C912	B-2
C913	C-1
C914	A-3
C916	B-1
C917	A-3
C918	B-1
C919	B-2
C920	B-2
C921	B-1
C922	B-1
C924	B-2
C925	A-1
C927	A-1
C929	B-3
C930	B-3
C931	A-3
C933	C-3
C934	B-4
C935	A-3
C936	B-4
C937	C-3
C938	C-3
C939	C-3
C940	A-3
C941	A-4
CN901	B-1
CN902	A-3
D901	B-1
D902	C-2
IC901	B-1
IC902	B-3
IC904	A-1
L901	C-3
L902	C-2
L903	A-4
L905	B-1
Q901	A-2
Q902	A-2
Q903	B-4
Q904	B-4
Q906	C-1
R901	C-3
R902	A-3
R904	B-3
R905	B-3
R906	A-3
R907	A-3
R908	A-4
R911	B-2
R912	B-2
R913	B-2
R914	B-2
R915	B-2
R916	A-3
R917	B-2
R918	A-4
R919	A-4
R920	A-4
R921	A-2
R922	A-2
R923	A-2
R924	A-2
R929	A-3
R930	A-3
R934	B-1
R935	C-3
R936	C-3
R937	B-4
R938	B-4
R939	C-3
R940	B-3
R941	B-3
R942	B-3
R943	B-4


VF-99
(B/W EVF (B/W EVF MODEL))
VF-112
(COLOR EVF (COLOR EVF MODEL))
LB-50
BACK LIGHT
(COLOR EVF MODEL)
VF-111
COLOR EVF
(COLOR EVF MODEL)
VC-190
CAMERA, Y/C PROCESS,
VIDEO PROCESS,
REC/PB HEAD AMP,
SERVO/SYSTEM CONTROL,
AUDIO, VIDEO IN/OUT,
MODE CONTROL
PJ-80
(AV IN/OUT)
MI-29
(STEREO MIC, LASER LINK)

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor



SECTION 5
ADJUSTMENTS

Refer to page 2 as Table for distinction functions of models and classification

5-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Color monitor
- Regulated power supply
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote commander (RM-95-remodeled partly)Note 1	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking the flange back
J-7	CPC-7 jig	J-6082-382-A	For the color viewfinder adjustment For adjusting the video section
J-8	Power code	J-6082-223-A	For connecting the battery terminal and DC power supply
J-9	AFM DEV jig	J-6082-312-A	For adjusting the deviation
J-10	Clear chart	J-6080-621-A	
J-11	Extension cable (16P, 0.5 mm)	J-6082-357-A	For extension between the CD-166 board (CN401) and VC-190 board (CN112)
J-12	IR receiver jig	J-6082-383-A	For adjusting the IR transmitter

Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

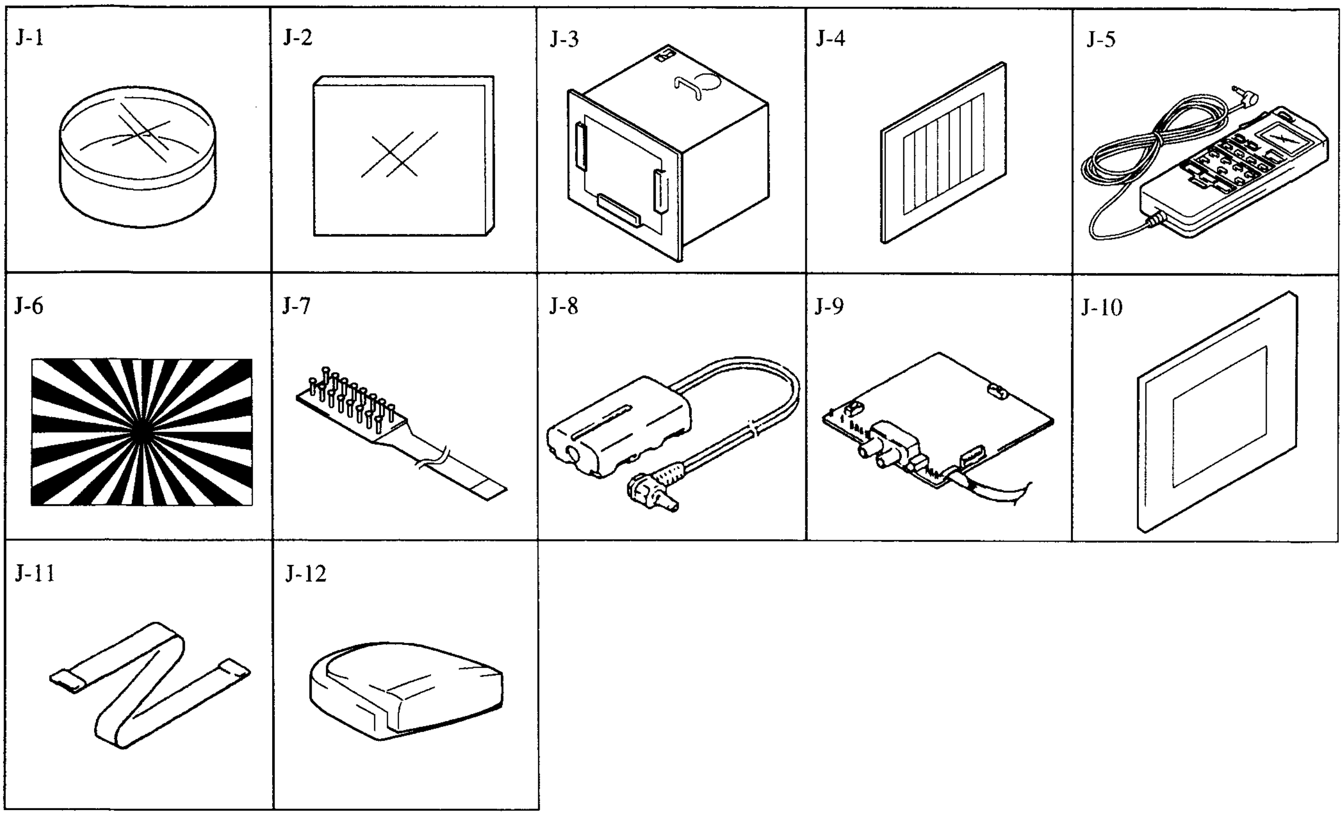

J-1
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
J-11
J-12

Fig. 5-1-1.

1-1-2. Preparations

Note 1: Refer to "Section 2 DISASSEMBLY" for details of how to remove the cabinet and boards.

Note 2: If performing only adjustments, the lens block and VC-190 board need not be adjusted.

1) Connect the adjusting equipment according to Fig. 5-1-3.
2) The front panel block (MI-29 board) need not be connected.
   To remove, disconnect the following connector.
   1. CN303 (26P, 0.5 mm) of MI-29 board
3) The accessory shoe need not be connected.
   To remove, disconnect the following connector.
   1. CN205 of VC-190 board (10P, 0.5 mm) (CCD-TR930/TR825E/TR930E)
4. The viewfinders (VF-111, 112 boards (COLOR EVF model), VF-99 board (B/W EVF model) need not be connected. To remove, disconnect the following connector.
   1. CN111 of VC-190 board (20P, 0.5 mm)
5) By setting the "forced power supply ON mode", the camera power supply can be turned ON even if the cabinet (R) (power switch, Control switch block) has been removed. When removing the cabinet (R), disconnect the following connector. However, as removing CN1953 means removing the lithium 3V power supply, data such as date, time, user-set menus will be lost. After adjustments, reset these data. If CN1953 has been removed, the self-diagnosis data, data on history of use (total drum rotation time, date of when the user first turned the power ON, and the date of when condensation occurred the last time) will be lost. Before removing, note down the self-diagnosis data and data of page:3, address:E0 to E9. (Refer to the "Service Mode" of "VIDEO SECTION ADJUSTMENT" for the data on the history of use.)
   1. CN1953 of VC-190 board (28P, 0.5 mm)

After the adjustments, be sure to exit the "forced camera power supply ON mode".

Note 3: Setting the "forced camera power supply ON mode"
1) Set data: 01 to page: 0, address: 01.
2) Set data: 21 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.

The camera power supply can be turned ON even if the cabinet (R) has been removed using the above steps. After completing adjustments, be sure to exit the "forced Camera power supply ON mode".

Note 4: Exiting the "forced camera power supply ON mode"
1) Set data: 01 to page: 0, address: 01.
2) Set data: 00 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 0, address: 01.

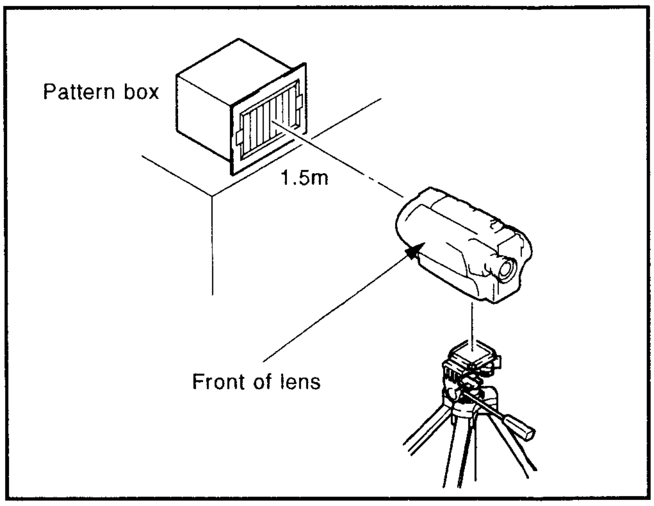


Fig. 5-1-2.

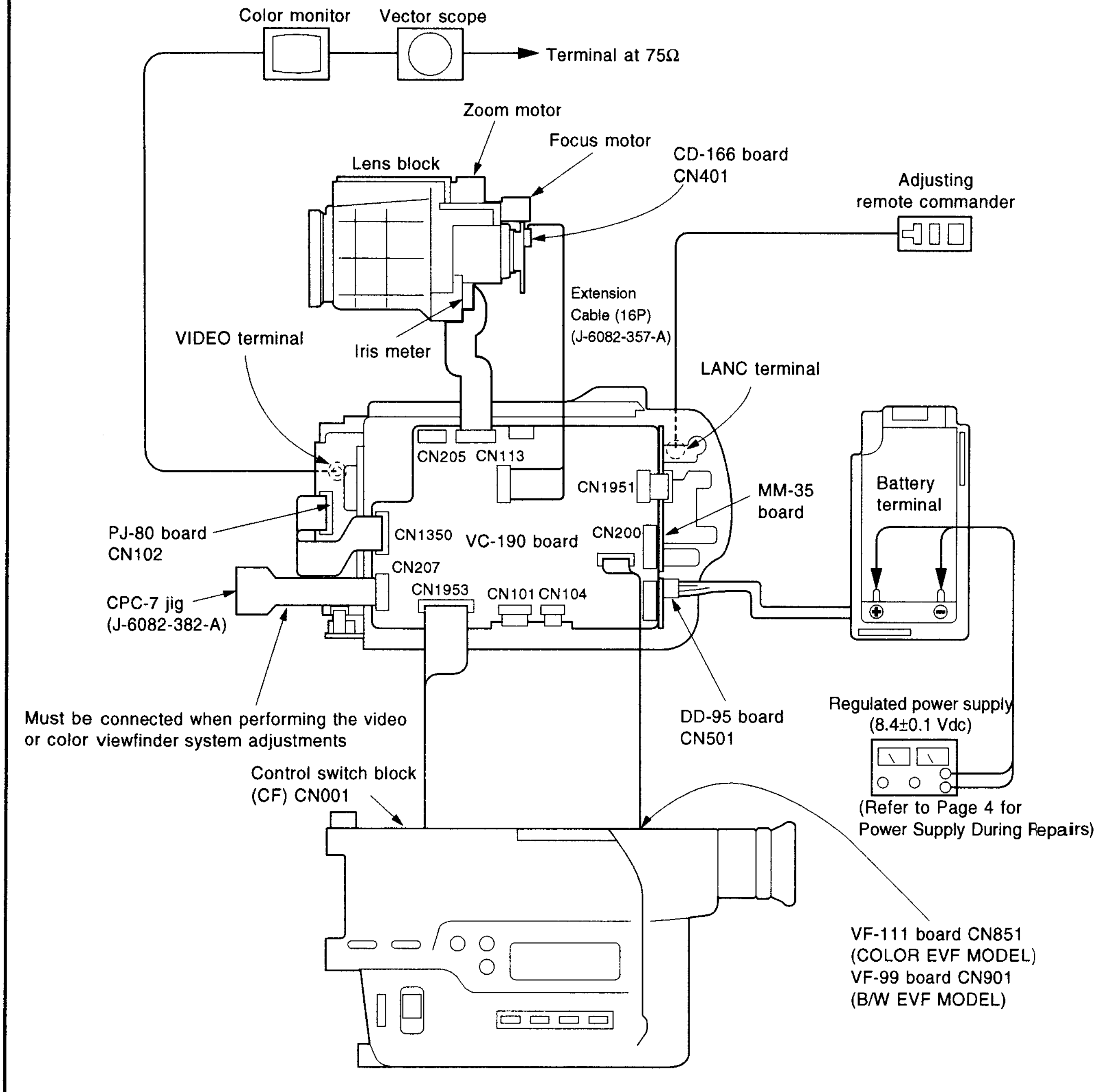

Color monitor
Vector scope
Terminal at 75Ω
Zoom motor
Focus motor
Lens block
CD-166 board
CN401
Adjusting
remote commander
Extension
Cable (16P)
(J-6082-357-A)
VIDEO terminal
Iris meter
LANC terminal
CN205
CN113
CN1951
MM-35
board
Battery
terminal
PJ-80 board
CN102
CN1350
VC-190 board
CN200
CN207
CPC-7 jig
(J-6082-382-A)
CN1953
CN101
CN104
Must be connected when performing the video
or color viewfinder system adjustments
DD-95 board
CN501
Regulated power supply
(8.4±0.1 Vdc)
Control switch block
(CF) CN001
(Refer to Page 4 for
Power Supply During Repairs)
VF-111 board CN851
(COLOR EVF MODEL)
VF-99 board CN901
(B/W EVF MODEL)

Fig. 5-1-3.

1-1-3. Precautions

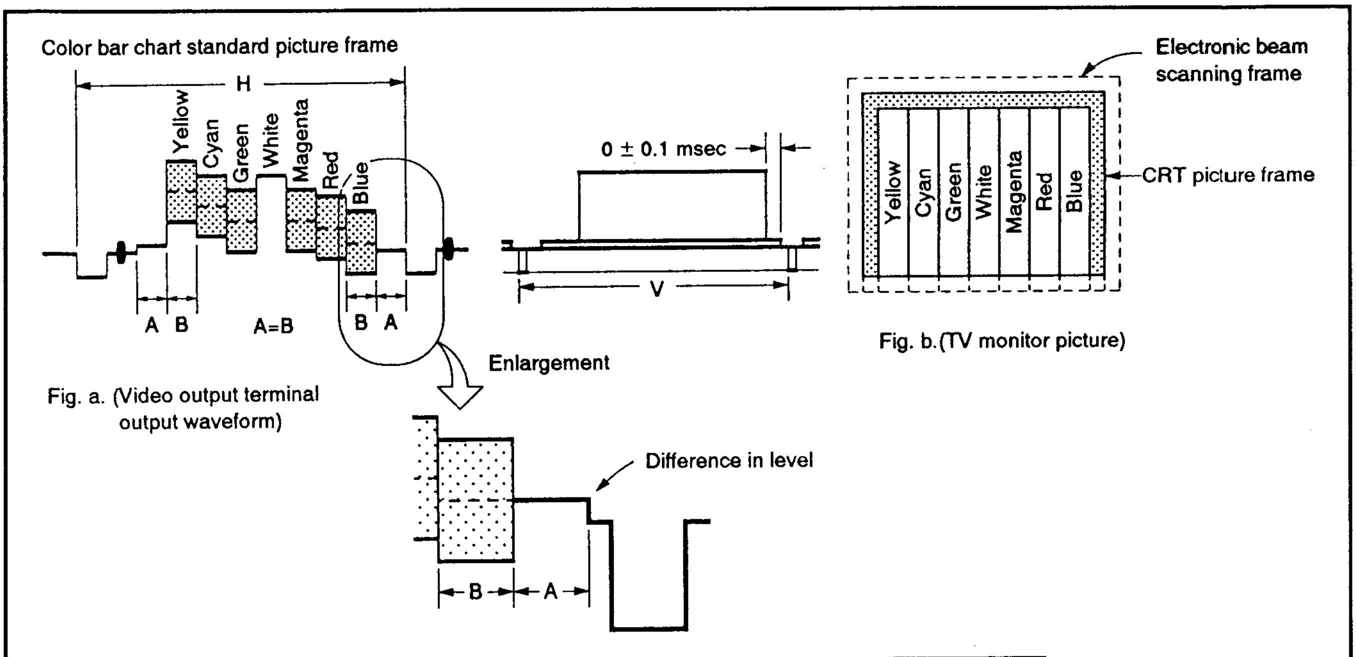
1. Switch settings

Set the switches to the following positions, and adjust with out loading the cassette tape, unless specified otherwise.

1. CAMERA/VTR (or PLAYER) switch (Control switch block (PS-6500)) .... CAMERA
2. DEMO MODE switch (Menu display) .... OFF
3. DIGITAL ZOOM switch (Menu display) .... OFF
4. STEADY SHOT switch (Control switch block (CF)) .... OFF
5. FOCUS switch (Control switch block (CF)) .... MANUAL
6. PROGRAM AE button (Control switch block (CF)) ..... OFF
7. BACK LIGHT button (Control switch block (CF)) ... OFF
8. 16 : 9 WIDE button (Control switch block (CF)) ...... OFF
9. PICTURE EFECT button (Control switch block (CF)) .... OFF

2. Adjusting Procedure

Adjust in the given order.


Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
Fig. a. (Video output terminal output waveform)
0 ± 0.1 msec
V
Enlargement
Difference in level
B
A
Electronic beam scanning frame
Yellow
Cyan
Green
White
Magenta
Red
Blue
CRT picture frame
Fig. b.(TV monitor picture)

Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the TV monitor display shown in Fig. b.

Fig. 5-1-4.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 5-1-4. if adjustments are performed using the color bar chart. (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and insert a clear chart in its place. (Do not perform zoom operations during this time.)
3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm x 841 mm) paper to a black one, and make the chart shown in Fig. 5-1-5.

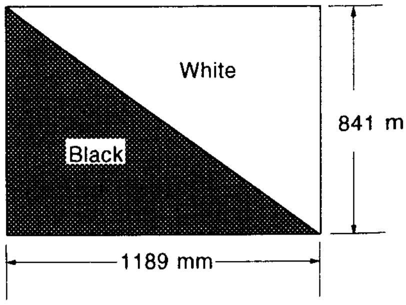

White
Black
841 mm
1189 mm

Fig. 5-1-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

1-1-4. Adjusting Remote Commander

The adjusting remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjusting remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the adjusting remote commander

1) Connect the adjusting remote commander to the LANC terminal.
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 5-1-6.

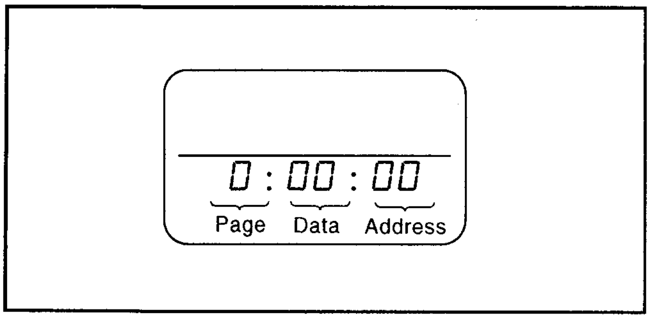


Fig. 5-1-6.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 5-1-1.

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▷) button is pressed, and decreases when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (D, E, F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)
4) Select page: 0, address: 01, and set the data to 01, and enables Page D and E, F to be adjusted.
5) After completing all adjustments, set data: 00 to page: 0, address: 01 and turn off the main power supply (8.4V) once.

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

1-1-5. Page D Address

Note 1: The ← mark shown in the adjustment data memo column indicates that the address data is fixed and same as the initial value.

Note 2: The initial adjustment data value is the value after "Page D, Page E, Page F Data Initialization" and "Page D Data Modification" have been executed. It is different from the value after all adjustments have been executed.

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
00 to 0F					
10	00	00	00	00	←
11	02	06	06	07	←
12	7E	FC	FC	FE	←
13	06	01	01	06	←
14	17	07	17	17	←
15	01	01	F1	01	←
16	00	00	00	00	←
17	0C	0C	0C	0C	←
18	8C	8C	80	0C	←
19	16	16	16	16	←
1A	37	37	37	37	←
1B	15	15	15	15	←
1C	28	28	28	28	←
1D	85	81	81	81	←
1E	00	00	00	00	←
1F	48	48	48	48	←
20	00	00	00	01	←
21	30	30	30	80	←
22	09	08	08	09	←
23	30	20	25	20	←
24	12	12	12	12	←
25	64	50	50	50	←
26	04	04	04	04	←
27	F9	F9	F9	F9	←
28	88	88	88	88	
29	8D	8D	8D	8D	
2A	A8	A8	A8	A8	
2B	BD	BD	BD	BD	
2C	C8	C8	C8	C8	
2D	05	05	05	05	←
2E	00	00	00	00	←
2F	01	01	01	01	←
30	05	05	05	05	←
31	41	41	41	41	←
32	30	30	30	30	←
33	CC	CC	CC	CC	←
34	07	07	07	07	←
35	88	88	88	88	
36	C9	C9	C9	C9	←
37	02	02	02	02	←
38	02	02	02	02	←
39	04	04	04	04	←
3A	0A	0A	0A	0A	←

Table 5-1-2 (1).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
3B	32	32	32	32	←
3C	00	00	00	00	←
3D	80	80	80	80	←
3E	04	03	03	03	←
3F	02			04	←
40	3F			3F	←
41	00			00	←
42	24			24	←
43	24			24	←
44	82			82	←
45	00			00	←
46	88			C8	←
47	67			67	←
48	A3			A3	
49	A6			A6	
4A	AD			AD	
4B	6F			6F	
4C	93			93	←
4D	93			93	←
4E	B0			B0	←
4F	B4			B4	
50	48			48	
51	40			40	
52 to 63					

Table 5-1-2 (2).

1-1-6. Page F Address

Note 1: The ← mark shown in the adjustment data memo column indicates that the address data is fixed and same as the initial value.

Note 2: The initial adjustment data value is the value after "Page D, Page E, Page F Data Initialization" and "Page F Data Modification" have been executed. It is different from the value after all adjustments have been executed.

Address	**Adjustment Data**				
	Initial Value				**Memo Column**
	CCD-TR930	**CCD-TR820E**	**CCD-TR825E**	**CCD-TR920E**	
00					
01					
02					
03					
04					
05	B4	BA	BA	BA	←
06	B8	B8	B8	B8	←
07	5E	5E	5E	5E	←
08	47	47	47	47	←
09	58	58	58	58	←
0A	6B	6B	6B	6B	←
0B	8E	8E	8E	8E	←
0C					
0D					
0E					
0F					
10	00	00	00	00	
11	00	00	00	00	
12	00	00	00	00	
13	00	00	00	00	
14	00	00	00	00	
15	00	00	00	00	
16	00	00	00	00	
17	00	00	00	00	
18	00	00	00	00	
19	00	00	00	00	
1A	00	00	00	00	
1B	00	00	00	00	
1C	76	57	57	77	←
1D	08	10	10	10	←
1E	23	23	23	23	←
1F	52	52	52	52	
20	00	02	02	02	←
21	02	02	02	02	←
22	3B	3B	3B	3B	
23	00	00	00	00	←
24	7C	7C	7C	7C	←
25	80	80	80	80	←
26	1F	1F	1F	1F	←
27	00	00	00	04	←
28	84	84	86	84	←
29	00	00	00	04	←
2A	FF	FF	FF	FF	
2B	3B	3B	3B	3B	

Table 5-1-3 (1).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
2C	7D	7D	7D	7D	
2D	56	56	56	56	
2E	00	00	00	00	←
2F	00	00	00	00	←
30	A6	A6	A6	A6	
31	1A	1A	1A	1A	
32	15	15	15	15	
33	24	24	24	24	
34	8C	8C	8C	8C	
35	11	11	11	11	
36	00	00	00	00	
37	0A	0A	0A	0A	
38	00	00	00	00	
39	0A	0A	0A	0A	
3A	3C	3C	3C	3C	
3B	A0	A0	A0	A0	
3C	80	80	80	80	
3D	80	80	80	80	
3E	30	30	30	30	
3F	49	49	49	49	←
40	1B	1B	1B	1B	
41	1B	1B	1B	1B	
42	AE	AE	AE	AE	
43	42	42	42	42	
44	44	44	44	44	
45	34	34	34	34	
46	2A	2A	2A	2A	
47	89	89	89	89	
48	59	59	59	59	
49	38	38	38	38	
4A	41	41	41	41	
4B	25	25	25	25	
4C	00	00	00	00	
4D	19	19	19	19	
4E	00	00	00	00	
4F	16	16	16	16	
50	52	52	52	52	
51	52	52	52	52	
52	7A	7A	7A	7A	
53	8D	8D	8D	8D	
54	7A	7A	7A	7A	
55	55	55	55	55	←
56	A8	A8	A8	A8	
57	00	00	00	00	
58	9A	9A	9A	9A	
59	50	50	50	50	←
5A	7B	7B	7B	7B	
5B	B3	B3	B3	B3	

Table 5-1-3 (2).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
5C	99	AA	AA	AA	←
5D	70	70	70	70	←
5E	A8	A2	A2	A2	←
5F	70	70	70	70	←
60	D5	D5	D5	D5	
61	D5	D5	D5	D5	
62	EA	EA	EA	EA	
63	EA	EA	EA	EA	
64	8B	97	97	97	←
65	80	8C	8C	8C	←
66	89	97	97	97	←
67	80	8C	8C	8C	←
68	B8	B8	B8	B8	
69	B8	B8	B8	B8	
6A	B1	B1	B1	B1	
6B	B1	B1	B1	B1	
6C	80	80	80	80	
6D	80	80	80	80	
6E	80	80	80	80	
6F	80	80	80	80	
70	7D	80	80	80	←
71	7D	80	80	80	←
72	80	80	80	80	
73	80	00	00	00	
74	00	00	00	00	←
75	80	00	00	00	
76	80	00	00	00	
77	00	00	00	00	←
78	7C	92	92	92	←
79	AA	00	00	00	←
7A	A0	00	00	00	←
7B	C3	00	00	00	←
7C	0C	0C	0C	0C	←
7D	18	00	00	00	←
7E	77	77	77	77	←
7F	40	40	40	40	←
80	75	75	75	75	←
81	73	73	73	73	←
82	12	12	12	12	←
83	8A	8A	8A	8A	←
84	A5	A5	A5	A5	←
85	68	68	68	68	←
86	4A	4A	4A	4A	←
87	F0	F0	F0	F0	←
88	00	00	00	00	←
89	01	01	01	01	←
8A	6C	6C	6C	6C	←
8B	40	40	40	40	←

Table 5-1-3 (3).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
8C	68	28	28	28	←
8D	A0	60	60	60	←
8E	70	40	40	40	←
8F	40	29	29	29	←
90	68	28	28	28	←
91	70	A0	A0	A0	←
92	40	40	40	40	←
93	25	25	25	25	←
94	58	28	28	28	←
95	F0	80	80	80	←
96	40	40	40	40	←
97	3D	10	10	10	←
98	58	28	28	28	←
99	FF	FF	FF	FF	←
9A	40	40	40	40	←
9B	30	10	10	10	←
9C	78	28	28	28	←
9D	70	70	70	70	←
9E	4C	30	30	30	←
9F	06	00	00	00	←
A0	28	28	28	28	←
A1	FF	E0	E0	E0	←
A2	30	30	30	30	←
A3	10	00	00	00	←
A4	62	60	60	60	←
A5	91	91	91	91	←
A6	62	70	70	70	←
A7	B2	92	92	92	←
A8	62	70	70	70	←
A9	91	A2	A2	A2	←
AA	62	70	70	70	←
AB	A2	A3	A3	A3	←
AC	04	04	04	04	←
AD	E5	D5	D5	D5	←
AE	04	04	04	04	←
AF	F7	D6	D6	D6	←
B0	40	40	40	40	←
B1	00	00	00	00	←
B2	B3	B3	B3	B3	←
B3	B3	B3	B3	B3	←
B4	21	10	10	10	←
B5	05	01	01	01	←
B6	11	10	10	10	←
B7	06	03	03	03	←
B8	71	40	40	40	←
B9	35	32	32	32	←
BA	20	00	00	00	←
BB	00	00	00	00	←

Table 5-1-3 (4).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
BC	22	22	22	22	←
BD	80	80	80	80	←
BE	30	20	20	20	←
BF	40	40	40	40	←
C0	20	30	30	30	←
C1	50	50	50	50	←
C2	1B	2B	2B	2B	←
C3	4B	4B	4B	4B	←
C4	00	00	00	00	←
C5	00	00	00	00	←
C6	00	00	00	00	←
C7	CA	BB	BB	BB	←
C8	D9	C8	C8	C8	←
C9	DA	CA	CA	CA	←
CA	00	00	00	00	←
CB	CA	BB	BB	BB	←
CC	D9	C8	C8	C8	←
CD	DA	CA	CA	CA	←
CE	00	00	00	00	←
CF	27	27	27	27	←
D0	CA	CA	CA	CA	←
D1	00	00	00	00	←
D2	40	40	40	40	←
D3	1B	1B	1B	1B	←
D4	E0	EC	EC	EC	←
D5	A0	A0	A0	A0	←
D6	30	28	28	28	←
D7	20	1A	1A	1A	←
D8	C0	C0	C0	C0	←
D9	6A	6A	6A	6A	←
DA	60	60	60	60	←
DB	55	55	55	55	←
DC	55	55	55	55	←
DD	66	96	96	96	←
DE	25	25	25	25	←
DF	34	34	34	34	←
E0	3F	3F	3F	3F	←
E1	A0	A0	A0	A0	←
E2	00	00	00	00	←
E3	80	80	80	80	←
E4	70	70	70	70	←
E5	41	41	41	41	←
E6	1F	1F	1F	1F	←
E7	C0	C0	C0	C0	←
E8	14	14	14	14	←
E9	03	03	03	03	←
EA	00	00	00	00	←
EB	FE	FD	FD	FD	

Table 5-1-3 (5).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
EC	F5	F4	F4	F4	
ED	1A	21	21	21	←
EE	33	46	46	46	←
EF	FE	FE	FE	FE	←
F0	3C	3C	3C	3C	←
F1	24	24	24	24	←
F2	83	83	83	83	←
F3	A0	A0	A0	A0	←
F4	67	67	67	67	←
F5	4D	4D	4D	4D	←
F6	33	33	33	33	←
F7	5C	5C	5C	5C	←
F8	5C	5C	5C	5C	←
F9	5C	5C	5C	5C	←
FA	3C	3C	3C	3C	←
FB	0F	0F	0F	0F	←
FC	10	10	10	10	←
FD	2C	2C	2C	2C	←
FE	0A	0A	0A	0A	←
FF	36	36	36	36	←

Table 5-1-3 (6).

1-1-7. Page E Address

Note 1: The ← mark shown in the adjustment data memo column indicates that the address data is fixed and same as the initial value.

Note 2: The initial adjustment data value is the value after "Page D, Page E, Page F Data Initialization" and "Page E Data Modification" have been executed. It is different from the value after all adjustments have been executed.

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
00	42	72	72	72	←
01	06	06	06	06	←
02	E0	E0	E0	E0	←
03	50	50	50	50	←
04	3B	3B	3B	3B	←
05	14	14	14	14	←
06	E8	E8	E8	E8	←
07	90	90	90	90	←
08	00	00	00	00	←
09	02	02	02	02	←
0A	F3	F3	F3	F3	←
0B	A0	A0	A0	A0	←
0C	69	69	69	69	←
0D	89	89	89	89	←
0E	15	15	15	15	←
0F	50	50	50	50	←
10	5F	5F	5F	5F	←
11	69	69	69	69	←
12	93	93	93	93	←
13	AA	AA	AA	AA	←
14	65	65	65	65	←
15	44	44	44	44	←
16	A2	A2	A2	A2	←
17	63	63	63	63	←
18	90	90	90	90	←
19	33	33	33	33	←
1A	15	15	15	15	←
1B	82	82	82	82	←
1C	00	00	00	00	←
1D	F3	F3	F3	F3	←
1E	EE	EE	EE	EE	←
1F	AD	AD	AD	AD	←
20	D9	D9	D9	D9	←
21	20	20	20	20	←
22	2A	2A	2A	2A	←
23	EB	EB	EB	EB	←
24	1F	1F	1F	1F	←
25	0F	0F	0F	0F	←
26	31	31	31	31	←
27	20	20	20	20	←
28	53	53	53	53	←
29	41	41	41	41	←
2A	F8	F8	F8	F8	←
2B	10	10	10	10	←

Table 5-1-4 (1).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
2C	40	40	40	40	←
2D	60	60	60	60	←
2E	00	00	00	00	←
2F	00	00	00	00	←
30	00	00	00	00	←
31	10	10	10	10	←
32	20	20	20	20	←
33	12	12	12	12	←
34	3D	3D	3D	3D	←
35	00	00	00	00	←
36	00	00	00	00	←
37	00	00	00	00	←
38	00	00	00	00	←
39	00	00	00	00	←
3A	00	00	00	00	←
3B	20	20	20	20	←
3C	26	21	21	21	←
3D	27	24	24	24	←
3E	08	09	09	09	←
3F	09	08	08	08	←
40	CC	20	20	20	←
41	40	40	40	40	←
42	1E	1E	1E	1E	←
43	00	00	00	00	←
44	F8	00	00	00	←
45	30	22	22	22	←
46	10	10	10	10	←
47	04	00	00	00	←
48	04	04	04	04	←
49	F8	F8	F8	F8	←
4A	F8	F8	F8	F8	←
4B	60	60	60	60	←
4C	50	50	50	50	←
4D	1C	20	20	20	←
4E	00	F8	F8	F8	←
4F	48	60	60	60	←
50	40	50	50	50	←
51	1E	20	20	20	←
52	00	F8	F8	F8	←
53	80	80	80	80	←
54	FF	FF	FF	FF	←
55	DD	DD	DD	DD	←
56	B4	B4	B4	B4	←
57	94	94	94	94	←
58	74	74	74	74	←
59	62	62	62	62	←
5A	49	49	49	49	←
5B	19	19	19	19	←

Table 5-1-4 (2).

Address	Adjustment Data				
	Initial Value				Memo Column
	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E	
5C	16	16	16	16	←
5D	16	16	16	16	←
5E	00	00	00	00	←
5F	00	00	00	00	←
60	F3	F5	F5	F5	←
61	EB	EB	EB	EB	←
62	00	00	00	00	←
63	00	00	00	00	←
64	00	00	00	00	←
65	00	00	00	00	←

Table 5-1-4 (3).

1-1-8. Data Processing

The calculation of the DDS display and the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 5-1-5. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

The lower digits of the hexadecimal notation / The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	②↓ D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
①→ **B (b)**	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (bd).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 5-1-5.

1-2. INITIALIZATION OF D, E, F PAGE DATA

1. Initialization of D, E, F Page Data

Note: If the D, E, F page data has been initialized, all adjustments need to be performed again.

Note: < >: NTSC model (CCD-TR930)
[ ]: PAL model (CCD-TR820E/TR825E/TR920E)

Adjustment page	D
Adjustment address	00 to 63
Adjustment page	F
Adjustment address	00 to FF
Adjustment page	E
Adjustment address	00 to 65

Initializing method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: <55> [51] to page: 2, address: 00.
3) Set data: <55> [51] to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Check that the data of page: 2, address: 02 is 01.
5) Set data: 29 to page: 3, address: 00.
6) Set data: 29 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
7) Set data: 00 to page: 0, address: 01.
8) Perform "Modification of D Page Data".

2. Modification of D Page Data

If the D, E and F page data has been initialized, change the data as shown in the following table by manual input.

Note 1: Before changing the data, set data: 01 to page: 0, address:01.

Note 2: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the new data.

Note 3: After changing the data, set data: 00 to page: 0, address: 01. Also perform "Modification of F Page Data".

Address	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E
10	00	00	00	00
11	02	06	06	07
12	7E	FC	FC	FE
13	06	01	01	06
14	17	07	17	17
15	01	01	F1	01
16	00	00	00	00
17	0C	0C	0C	0C
18	8C	8C	80	0C
19	16	16	16	16
1A	37	37	37	37
1B	15	15	15	15
1C	28	28	28	28
1D	85	81	81	81
1E	00	00	00	00
1F	48	48	48	48
20	00	00	00	01
21	30	30	30	80
22	09	08	08	09
23	30	20	25	20
24	12	12	12	12
25	64	50	50	50
26	04	04	04	04
27	F9	F9	F9	F9
2D	05	05	05	05
2E	00	00	00	00
2F	01	01	01	01
30	05	05	05	05
31	41	41	41	41
32	30	30	30	30
33	CC	CC	CC	CC
34	07	07	07	07
36	C9	C9	C9	C9
37	02	02	02	02
38	02	02	02	02
39	04	04	04	04
3A	0A	0A	0A	0A
3B	32	32	32	32
3C	00	00	00	00

Table 5-1-6 (1).

Address	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E
3D	80	80	80	80
3E		03	03	03
3F	02			
40	3F			3F
42	24			24
43	24			24
45	00			00
46	88			C8
47	67			67

Table 5-1-6 (2).

3. Modification of F Page Data

If the D, E and F page data has been initialized, change the data as shown in the following table by manual input.

Note 1: Before changing the data, set data: 80 to page: 0, address:01.

Note 2: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the new data.

Note 3: After changing the data, set data: 00 to page: 0, address: 01. Also perform "Modification of E Page Data".

Address	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E
05	B4	BA	BA	BA
06	B8	B8	B8	B8
07	5E	5E	5E	5E
08	47	47	47	47
09	58	58	58	58
0A	6B	6B	6B	6B
0B	8E	8E	8E	8E
10	00	00	00	00
11	00	00	00	00
12	00	00	00	00
13	00	00	00	00
14	00	00	00	00
15	00	00	00	00
16	00	00	00	00
17	00	00	00	00
18	00	00	00	00
19	00	00	00	00
1A	00	00	00	00
1B	00	00	00	00
1C	76	57	57	77
1D	08	10	10	10
21	02	02	02	02
27	00	00	00	04
28	84	84	86	84
5D	70	70	70	70
5F	70			
64	8B	97	97	97
65		8C	8C	8C
66	89	97	97	97
67		8C	8C	8C
70	7D	80	80	80
71	7D	80	80	80
73	80			
75	80			
76	80			
8D	A0			
8F	40			
91				
93	25	A0	A0	A0
95	F0			

Table 5-1-7 (1).

Address	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E
97	3D			
99	FF			
9A	40			
9B	30			
A1	FF			
A2	30			
A3	10			
A7	B2			
B9	35			
BE	30			
C2	1B	2B	2B	2B
C3	4B	4B	4B	4B
D4	E0	EC	EC	EC
DD		96	96	96
EB	FE	FD	FD	FD
EC	F5	F4	F4	F4
ED	1A	21	21	21
EE		46	46	46

Table 5-1-7 (2).

4. Modification of E Page Data

If the D, E and F page data has been initialized, change the data as shown in the following table by manual input.

Note 1: Before changing the data, set data: 01 to page: 0, address:01.

Note 2: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the new data.

Note 3: After changing the data, set data: 00 to page: 0, address: 01. Also perform all adjustments of this unit.

Address	CCD-TR930	CCD-TR820E	CCD-TR825E	CCD-TR920E
00		72	72	72
3D		24	24	24
40	CC	20	20	20
44		00	00	00
47		00	00	00
4B	60			
4C	50	50	50	50
4D	1C			
4F	48			
50	40	50	50	50
51	1E			

Table 5-1-8.

1-3. CAMERA SYSTEM ADJUSTMENT

Before perform the camera system adjustments, Check that the specified values of "28 MHz Origin Oscillation Adjustment", "Y OUT Level Adjustment" and "C OUT Level Adjustment" of "VIDEO SYSTEM ADJUSTMENT" are satisfied.

1. HALL Adjustment

For detecting the position of the lens iris, adjust the hall AMP gain and hall offset.

Subject	Not required
Measurement Point	DDS display of EVF or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3C, 3D
Specified Value	13 to 17 during IRIS OPEN (Note 1)
	7C to 80 during IRIS CLOSE (Note 2)

Note 1: Set data: 01 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.

Note 2: Set data: 03 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 03 to page: 0, address: 03.
3) Set data: 21 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
4) Set data: 03 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
5) Set data: 80 to page: F, address: 3D, and press the PAUSE button of the adjusting remote commander.
6) Set data: 40 to page: F, address: 3C, and press the PAUSE button of the adjusting remote commander.
7) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and this data is named W_2.
8) Set data: 30 to page: F, address: 3C, and press the PAUSE button of the adjusting remote commander.
9) Read the DDS display data, and this data is named W_1.
10) Set data: 01 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
11) Read the DDS display data, and this data is named K_1.
12) Set data: 40 to page: F, address: 3C, and press the PAUSE button.
13) Read the DDS display data, and this data is named K_2.
14) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 5-1-5. "Hexadecimal notation-decimal notation conversion table".)
15) Calculate X_1' using the following equations (decimal notation calculation).

$$A' = W_2' + K_1' - W_1' - K_2' \quad \text{.............................. Equation 1}$$

$$B' = W_1' - K_1' \quad \text{.. Equation 2}$$

$$X_1' = \frac{1680 + (48 \times A') - (16 \times B')}{A'} \quad \text{.................. Equation 3}$$

16) Convert X_1' to hexadecimal notation, and obtain X_1. (Round off to one decimal place)
17) Set data: X_1 to page: F, address: 3C, and press the PAUSE button of the adjusting remote commander.
18) Change the data of page: F, address: 3D, and adjust the DDS display data to "15".
19) Press the PAUSE button of the adjusting remote commander.
20) Set data: 03 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
21) Read the DDS display data, and this data is named W_0. If W_0 lies within the "7C" to "80" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
22) Convert W_0 to decimal notation, and obtain W_0'.
23) Calculate X_2' using the following equations (decimal notation calculation).

$$C' = W_0' - B' - 21 \quad \text{.. Equation 4}$$

$$X_2' = \frac{(105 - B') \times (X_1' - 48) + (48 \times C')}{C'} \quad \text{........ Equation 5}$$

(X_1' and B' are values obtained from equations 2 and3)

24) Convert X_2' to hexadecimal notation and obtain X_2. (Round off to one decimal place)
25) Set data X_2 to page: F, address: 3C, and press the PAUSE button of the adjusting remote commander.
26) Change the data of page: F, address: 3D, and adjust the DDS display data to "7E".
27) Press the PAUSE button of the adjusting remote commander.
28) Set data: 01 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
29) Check that the DDS display data lies within the "13" to "17" range.

Processing after Completing Adjustments

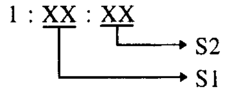
1) Set data: 00 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 0, address: 03.
4) Set data: 00 to page: 0, address: 01.

2. G-CAM flip Discrimination Adjustment

Sets the color reproduction conditions to optimum.

Subject	Random
Measuring point	Display data of page 1 of the adjusting remote commander (Note 1)
Measuring instrument	
Adjusting page	F
Adjusting address	1F
Specified value	S1≧S2

Note 1: Displayed data of page 1 of the adjusting remote commander



Adjusting method

1) Set data: 01 to page: 0, address: 01.
2) Set data: 16 to page: 0, address: 03.
3) Select page 1 of the adjusting remote commander, and compare the higher 2 digits (S1) and lower 2 digits (S2) of the 4-digit display data.
   [When S1<S2]
   Perform steps 4 onwards.
   [When S1≧S2]
   Perform steps 5 onwards.
4) Read the data of page: F, address: 1F, change the data according to the value read as shown in the following table, and press the PAUSE button of the adjusting remote commander.

Data Before Changing	Data After Changing
52	D2
D2	52

5) Set data: 00 to page: 0, address: 03.
6) Set data: 00 to page: 0, address: 01.

3. Flange Back Adjustment

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

3-1. Flange Back Adjustment (1)

Subject	Flange back adjustment chart (2.0m from the front of the lens) (Luminance: 200 ± 50 lux)
Measurement Point	Check operations on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	30 to 35, 4B to 4F

Adjusting method:

1) Check that at both the zoom lens TELE terminal and WIDE terminal, the center of the chart for the flange back adjustment and center of the exposure screen coincide.
2) Set data: 01 to page: 0, address: 01.
3) Check that the data of page: F, address: 30 to 35, 4B to 4F is the initial value (see table below).

Address	Data	Address	Data
30	A6	4B	25
31	1A	4C	00
32	15	4D	19
33	24	4E	00
34	8C	4F	16
35	11		

4) Check that the data of page: 2, address: 02 is 00.
5) Set data: 13 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 15 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
   (The adjustment data will be automatically input to page: F, address: 30 to 35, 4B to 4F.)
7) Check that the data of page: 2, address: 02 is "01".

Processing after Completing Adjustments

1) Turn OFF the main power supply (8.4V)
2) Perform "Flange Back Adjustment (2)".

3-2. Flange Back Adjustment (2)

Perform this adjustment after performing "Flange Back Adjustment (1)".

Subject	Subject more than 500m away (Subjects with clear contrast such as buildings, etc.)
Adjustment Page	F
Adjustment Address	30 to 35, 4B to 4F

Adjusting method:

1) Set the IRIS to open. (Use a ND filter)
2) Set the zoom lens to the TELE end and expose a subject that is more than 500 m away (subjects with clear contrast such as buildings, etc.). (Nearby subjects less than 500 m away should not be in the screen.)
3) Set data: 01 to page: 0, address: 01.
4) Check that the data of page: 2, address: 02 is "00".
5) Set data: 13 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 29 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
   (Adjustment data will automatically be input to page: F, addresses: 30 to 35, 4B to 4F.)
7) Check that the data of page: 2, address: 02 is "01".

Processing after Completing Adjustments

1) Set data: 00 to page: 0, address: 01.
2) Turn OFF the main power supply (8.4V).
3) Perform "Flange Back Check".

4. Flange Back Check

Subject	Siemens star (2.0m from the front of the lens Luminance: approx. 200 lux)
Measurement Point	Check the operation on the TV monitor
Measuring Instrument	
Specified Value	Focused at the TELE end and WIDE end.

Checking method:

1) Place the Siemens star 2.0m from the front of the lens.
2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appears on the image.
3) Set data: 02 to page: 2, address: 40.
4) Set data: 01 to page: 2, address: 41.
5) Shoot the siemens star with the zoom TELE end.
6) Turn on the auto focus.
7) Check that the lens is focused (Note 1), and turn off the auto focus
8) Set data: 10 to page: 2, address: 21.
9) Shoot the siemens star with the zoom WIDE end.
10) Check that the lens is focused.

Note 1: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on page 1 of the adjusting remote commander.
1) Set data: 0F to page: 0, address: 03.
2) Page 1 shows the state of the focus.

1 : 00 : XX → (Odd: Focused / Even: Unfocused)

Processing after Completing Adjustments

1) Set data: 00 to page: 2, address: 21.
2) Set data: 00 to page: 0, address: 03.
3) Set data: 00 to page: 2, address: 40.
4) Set data: 00 to page: 2, address: 41.

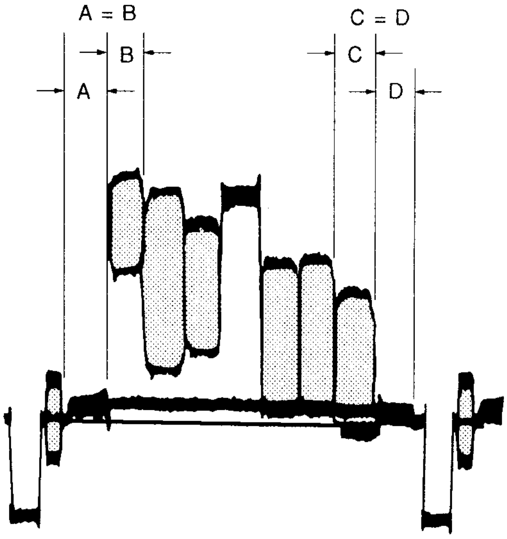
5. Picture Frame Setting

Subject	Color bar chart standard picture frame (1.5m from the front of the lens)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A = B, C = D, t = 0 ± 0.1 msec

Setting method:

1) Adjust the zoom and the camera direction, and set to the specified position.
2) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame".

1. horizontal period



2. Vertical period

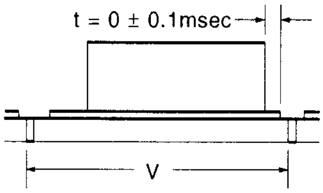


Fig. 5-1-7.

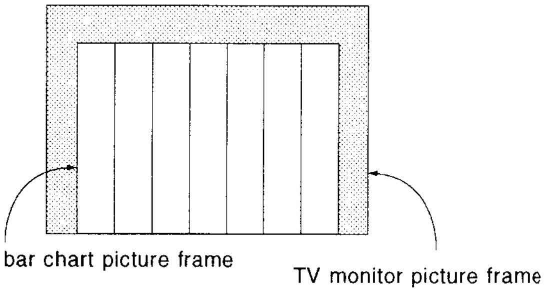

Color bar chart picture frame
TV monitor picture frame

Fig. 5-1-8.

6. Color Reproduction Adjustment

Adjust the color separation matrix coefficient so that the proper color reproduction is produced.

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	41, 43, EB, EC
Specified Value	All color luminance points should settle within each color reproduction frame.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 3D to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Set data: 3F to page: F, address: 22, and press the PAUSE button of the adjusting remote commander.
4) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
5) Change the data of addresses 41, 43, EB and EC of page: F, and settle each color luminance point in each color reproduction frame.
   Note 1: Be sure to press the PAUSE button of the adjusting remote commander before changing the addresses. If not, the new data will not be written to the memory.
6) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Set data: 00 to page: 2, address: 01 and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 0, address: 01.

For NTSC model (CCD-TR930)

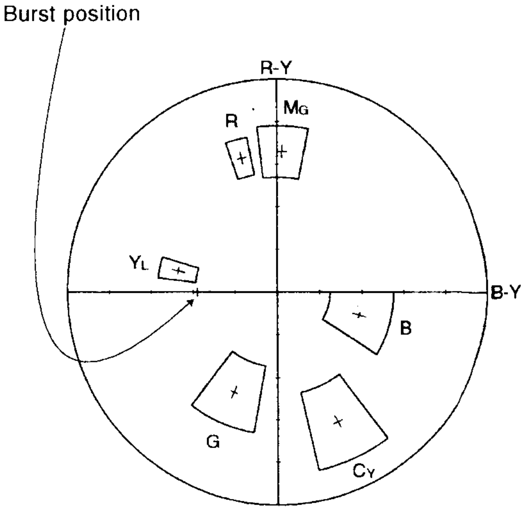


Fig. 5-1-9.

For PAL model (CCD-TR820E/TR825E/TR920E)

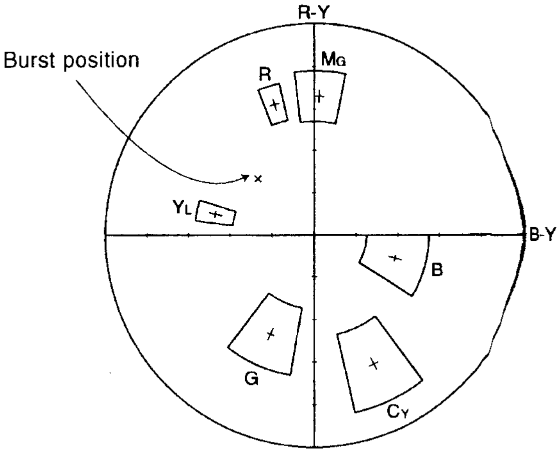


Fig. 5-1-10.

7. IRIS IN/OUT Adjustment

For the unit to judge if the white balance is indoors or outdoors in auto white balance operations, measure the light level and write it in the EEPROM.

If the level is not correct, the white balance will not be accurate.

Subject	Clear chart (Color bar standard picture frame)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	49, 4A

Switch setting:

1) STEADY SHOT switch .... OFF

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 06 to page: 0, address: 03.
3) Set data: 21 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
4) Set data: 02 to page: 2, address: 40.
5) Set data: 0B to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Read the DDS display data (Note 1), and take the upper two digits as D_1 and the lower two as D_2.
7) Convert D_1 to a decimal number and obtain D_1'. (Refer to Table 5-1-5. "Hexadecimal Notation-Decimal Notation Conversion Table".)
8) Calculate D_3' using the following equations. (Equations 1 and 2 are for decimal notation calculation)

   When $D_2 \geqq$ D0

   $D_3' = D_1' - 21$ .... Equation 1

   When $D_2 <$ D0

   $D_3' = D_1' - 22$ .... Equation 2
9) Convert D_3' to a hexadecimal number and obtain D_3.
10) Set D_3 to page: F, address: 49, and press the PAUSE button of the adjusting remote commander.
11) Set data: 09 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
12) Read the DDS display data (Note 1), and take the upper two digits as D_4 and the lower two as D_5.
13) Convert D_4 to a decimal number and obtain D_4'. (Refer to Table 5-1-5. "Hexadecimal Notation-Decimal Notation Conversion Table".)
14) Calculate D_6' using the following equations. (Equations 3 and 4 are for decimal notation calculation)

    When $D_5 \geqq$ F0

    $D_6' = D_4' - 13$ .... Equation 3

    When $D_5 <$ F0

    $D_6' = D_4' - 14$ .... Equation 4
15) Convert D_6' to a hexadecimal number and obtain D_6.
16) Set D_6 to page: F, address: 4A, and press the PAUSE button of the adjusting remote commander.

Note 1: The right four digits of the display data at the right bottom side of the EVF and monitor TV is the LIGHT LEVEL data. If the lower digits change severely and cannot be read, record it on a tape once, play it back by frame feeding, and obtain the average value.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 2, address: 40.
4) Set data: 00 to page: 0, address: 03.
5) Set data: 00 to page: 0, address: 01.

8. MAX GAIN Adjustment

Setting the minimum illumination.
If it is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

Subject	Clear chart (Color bar standard picture frame)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E
Specified Value	NTSC model: B0 to B8 PAL model: B6 to BE

Note 1: NTSC model: CCD-TR930
PAL model: CCD-TR820E/TR825E/TR920E

Switch setting:
1) STEADY SHOT switch .... OFF

Adjusting method:
1) Set data: 01 to page: 0, address: 01.
2) Set data: 21 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
3) Set data: 01 to page: 0, address: 03.
4) Set data: 02 to page: 2, address: 40.
5) Set data: 40 to page: 2, address: 56.
6) Set data: 19 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
7) Change the data of page: F, address: 3E and adjust so that the DDS display data (Note 2) lies within the specified value.
8) Press the PAUSE button of the adjusting remote commander.

Note 2: The right two digits of the display data at the right bottom side of the EVF and monitor TV is the object data. If the data change severely and cannot be read, record it on a tape once, play it back by frame feeding, and obtain the avarage value.

Processing after Completing Adjustments
1) Set data: 00 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 2, address: 40.
4) Set data: 00 to page: 2, address: 56.
5) Set data: 00 to page: 0, address: 03.
6) Set data: 00 to page: 0, address: 01.

9. Auto White Balance Standard Data Input

Subject	Clear chart (Color bar standard picture frame)
Adjustment Page	F
Adjustment Address	2A to 2D

Note 1: Perform "Color Reproduction Adjustment" before this adjustment.

Note 2: Check that the data of page: 2, address: 02 is 00. If not, turn the power of the unit OFF/ON.

Adjusting method:
1) Set data: 01 to page: 0, address: 01.
2) Wait for 2 seconds.
3) Set data: 11 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Set data: 0D to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
(When the standard data is taken in, the data will be automatically input to addresses 2A to 2D of page F.)
5) Check that the data of page: 2, address: 02 is 01.
6) Perform "Auto White Balance Adjustment".

Processing after Completing Adjustments
1) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 0, address: 01.

10. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	47, 48
Specified Value	R ratio: 2B40 to 2BC0 B ratio: 5E40 to 5EC0

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Set data: 01 to page: 0, address: 01.
3) Set data: 21 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
4) Set data: 3F to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
5) Set data: 04 to page: 0, address: 03.
6) Change the data of page: F, address: 47, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to the R ratio specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Set data: 05 to page: 0, address: 03.
9) Change the data of page: F, address: 48, and adjust the average value of the DDS display data to the B ratio specified value.
10) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 0, address: 03.
4) Set data: 00 to page: 0, address: 01.

11. White Balance Check

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 5-1-11. A to C

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 0F to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Check that the center of the white luminance point is within the circle shown in Fig. 5-1-11.A.
4) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
5) Set data: 23 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Place the C14 filter on the lens.
7) Check that the center of the white luminance point settles in the circle shown in Fig. 5-1-11. B.
8) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
9) Check that the center of the white luminance point settles in the circle shown in Fig. 5-1-11. C.

Processing after Completing Adjustments

1) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.

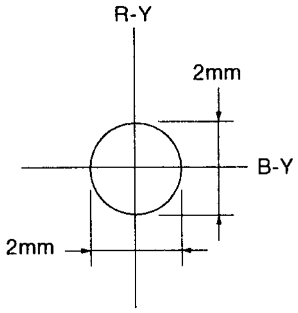

R-Y
2mm
B-Y
2mm

Fig. 5-1-11. A

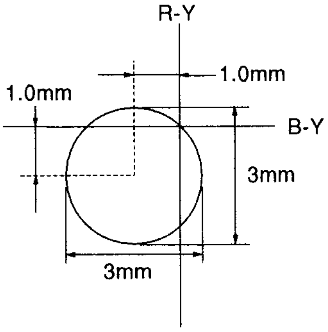

R-Y
1.0mm
1.0mm
B-Y
3mm
3mm

Fig. 5-1-11. B

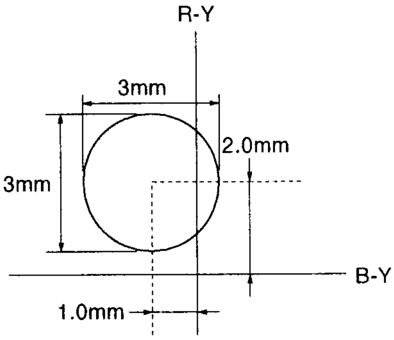

R-Y
3mm
2.0mm
3mm
B-Y
1.0mm

Fig. 5-1-11. C

12. Velocity Sensor Sensitivity Adjustment

- This adjustment is performed only when replacing the velocity sensor.
  Although this adjustment need not be performed when the circuit is damaged, etc., check the operations.
- Note down the sensitivity displayed on the velocity sensor of the repair parts. At this time, note down also to which board it was attached to.
  Be sure to check because if attached incorrectly, the screen will vibrate up and down or left and right during hand-shake correction operations.

Precautions on Parts Replacement

There are two types of repair parts-ENC05EA and ENC05EB. Replace the broken sensor with a same type of sensor. If ENC05EA and ENC05EB are attached correctly, the screen will vibrate up and down or left and right during hand-shake correction operations. After replacing, re-adjust according to the adjusting method after replacement.

Precautions on Velocity Sensor

The sensor incorporates a precision oscillator. Handle it with care as if it is dropped, the the balance of the oscillator will be disrupted and operations will not be performed properly.

Adjusting page	F
Adjusting address	50, 51

Note: The sensor sensitivity of SE451 and SE452 of the SE-61 board is written only on the repair parts.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Read the sensor sensitivity written on SE452 of the SE-61 board, and this data is named S_{452}.
3) Read the sensor sensitivity written on SE451 of the SE-61 board, and this data is named S_{451}.
4) Calculate D_{50}' and D_{51}' using the following equation (decimal calculation).
   NTSC model
   $$D_{50}' = \frac{135}{S_{452}}$$
   $$D_{51}' = \frac{130}{S_{451}}$$
   PAL model
   $$D_{50}' = \frac{180}{S_{452}}$$
   $$D_{51}' = \frac{146}{S_{451}}$$
5) Convert D_{50}' and D_{51}' into hexadecimal digits, to obtain D_{50} and D_{51}. (Round off decimal points)
6) Set data: D_{50} to page: F, address: 50, and press the PAUSE button of the adjusting remote commander.
7) Set data: D_{51} to page: F, address: 51, and press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Set data: 00 to page: 0, address: 01.
2) Check that the hand-shake correction operations have been performed normally.

1-4. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (COLOR EVF model : CCD-TR930/TR920E)

Note 1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note 2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

Note 3: Set the VF PW-SAVE (Menu display) to "OFF" position, unless specified otherwise.

[Adjusting connector]

Most of the measuring points for adjusting the view-finder are concentrated in CN207 of the VC-190 board.

Connect the measuring instruments via the CPC-7 jig (J-6082-382-A).

The following table shows the Pin No. and signal name of CN207.

Pin No.	Signal name	Pin No.	Signal name
1	PB PCM RF	9	EZ I/O
2	REC RF	10	EVF UNREG (–)
3	RF SWP	11	EVF UNREG
4	CAP FG	12	EVF VG
5	REG GND	13	VCO
6	PB RF	14	BPF MON
7	RF AGC IN	15	RF AGC OUT
8	REC AFM	16	AFC FO

Table 5-1-9.

[Power Supply Voltage]

Adjust the power supply voltage so that the battery terminal voltage becomes 8.4 ± 0.1 Vdc .

1. EVF Initial Data Input

Mode	Camera
Subject	Arbitrary
Adjustment Page	D
Adjustment Address	40 to 51

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Select page: D, and input the data in the following table.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.
3) Set data: 00 to page: 0, address: 01.

Address	Data	Remark
40	3F	Fixed value
41	00	Fixed value
42	24	Fixed value
43	24	Fixed value
44	82	Fixed value
45	00	Fixed value
46	88 (NTSC), C8 (PAL)	Fixed value
47	67	Fixed value
48	A3	
49	A6	
4A	AD	
4B	6F	
4C	93	Fixed value
4D	93	Fixed value
4E	B0	Fixed value
4F	B4	
50	48	
51	40	

Table 5-1-10.

2. VCO Adjustment (VF-112 board)

Set the VCO freerun frequency. If deviated, the EVF screen will be blurred.

Mode	Camera
Subject	Arbitrary
Measurement point	Pin ⑬ of CN207 (VCO) on VC-190 board
Measuring instrument	Oscilloscope (DC range)
Adjustment page	D
Adjustment address	4F
Specified value	A = 1.8 ± 0.1Vdc

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Check the GND level of the oscilloscope.
3) Change the data of page: D, address: 4F, and set the PCO output voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 0, address: 01.

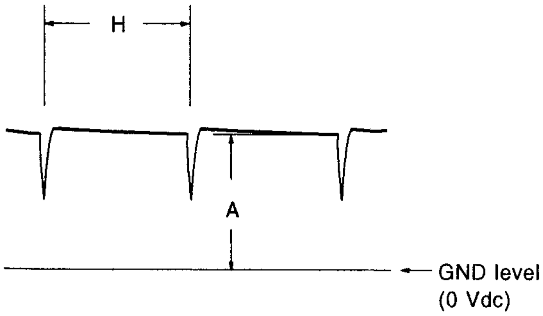


Fig. 5-1-12.

3. Bright Adjustment (VF-112 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	Camera
Subject	Arbitrary
Measurement point	Pin ⑫ of CN207 (EVF VG) on VC-190 board
Measuring instrument	Oscilloscope
Adjustment page	D
Adjustment address	48
Specified value	A = 7.1 ± 0.1 V

Connection:

1) Connect Pin ⑫ and Pin ⑤ (GND) of CN207 with a 3.3 kΩ resistor.
   3.3 kΩ resistor: 1-249-423-11

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Input the following data to page: D, address: 40 to 45.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	00	00	00	00	00	00

3) Change the data of page: D, address: 48, and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Input the following data to page: D, address: 40 to 45.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	3F	00	24	24	82	00

6) Set data: 00 to page: 0, address: 01.

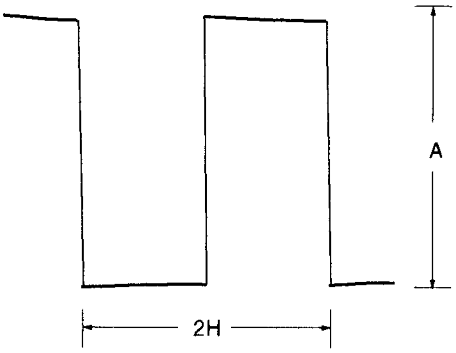


Fig. 5-1-13.

4. Contrast Adjustment (VF-112 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	Camera
Subject	Arbitrary
Measurement point	Pin ⑫ of CN207 (EVF VG) on VC-190 board
Measuring instrument	Oscilloscope
Adjustment page	D
Adjustment address	4B
Specified value	A = 1.50 ± 0.1V (NTSC) A = 1.40 ± 0.1V (PAL)

Connection:

1) Connect Pin ⑫ and Pin ⑤ (GND) of CN207 with a 3.3 kΩ resistor.
   3.3 kΩ resistor: 1-249-423-11

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Input the following data to page: D, address: 40 to 45.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	00	27	00	00	00	00

3) Change the data of page: D, address: 4B, and set the voltage (A) between white 50% and the pedestal to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Input the following data to page: D, address: 40 to 45.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	3F	00	24	24	82	00

6) Set data: 00 to page: 0, address: 01.

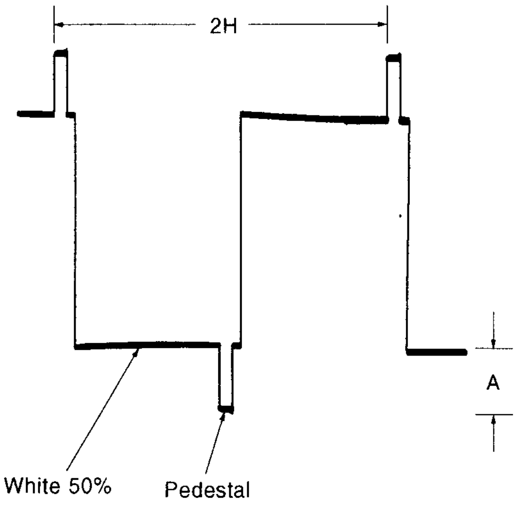


Fig. 5-1-14.

5. Backlight Consumption Current Adjustment (VF-111 board)

Set the backlight luminance and color temperature.
If deviated, the image may become dark or bright.

Mode	Camera
Subject	Arbitrary
Measurement point	+ Probe: Pin ⑪ of CN207 (EVF UNREG) on VC-190 board – Probe: Pin ⑩ of CN207 (EVF UNREG(–)) on VC-190 board
Measuring instrument	Digital voltmeter
Adjustment page	D
Adjustment address	50
Specified value	A = 20.0 ± 1.0 mVdc

Note: Adjust 30 seconds after running on the power supply.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Adjust the power supply voltage so that the voltage of Pin ⑪ of CN207 (EVF UNREG) on VC-190 board is 6.00 ± 0.05 Vdc.
3) Change the data of page: D, address: 50, and set the voltage difference (A) between Pin ⑪ of CN207 (EVF UNREG) and Pin ⑩ of CN207 (EVF UNREG(–)) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 0, address: 01.

6. White Balance Adjustment (VF-112 board)

Correct the white balance.

If deviated, the reproduction of the EVF screen may degenerate.

Mode	Camera
Subject	Arbitrary
Measurement point	Check on EVF screen
Measuring instrument	
Adjustment page	D
Adjustment address	49, 4A
Specified value	The EVF screen should not be colored.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Input the following data to page: D, address: 40 to 45.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	00	27	00	00	00	00

3) Set the data of page: D, address: 49 and 4A to the initial value.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	49	4A
Data	A6	AD

4) Check that the EVF screen is not colored. If colored, change the data of page: D, address: 49 and 4A so that the EVF screen is not colored.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.
5) Input the following data to page: D, address: 40 to 45.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	3F	00	24	24	82	00

6) Set data: 00 to page: 0, address: 01.

7. AUTO ON Level Adjustment (VF-111 board)

Adjust the power save sensor, and maintain at the level at which the backlight is AUTO ON.

Mode	Camera
Subject	Arbitrary
Measurement point	Check that the backlight lights up
Measuring instrument	
Adjustment page	D
Adjustment address	51
Specified value	AUTO OFF distance: Above 10 cm, less than 15 cm (Note2) AUTO ON distance: Above 9 cm, less than 11 cm (Note2)

Note 1: Do not perform this adjustment in strong light or under lights.

Note 2: The specified value is the adjustment value during adjustment. The specified value during operation check is as follows.
AUTO OFF distance: Above 9 cm, less than 15 cm
AUTO ON distance: Above 7 cm, less than 13 cm

Switch setting:

1) Set the "VF PW-SAVE" on the menu display to "ON".

Adjustment preparation:

1) Prepare a 30 cm X 30 cm white paper, and place it 10 cm away from the EVF lens.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Input the following data to page: D, address: 40 to 45.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	00	00	00	00	00	00

3) Increase the data of page: D, address: 51, and turn on the backlight.
4) Decrease the data of page: D, address: 51 slowly, and turn off the backlight.
5) Press the PAUSE button of the adjusting remote commander.
6) Move the white paper away from the EVF lens and turn off the backlight. Then move it to the lens slowly, and check that the backlight lights up when the distance (AUTO ON distance) is the specified value.
7) Move the white paper near the EVF lens so that the backlight lights up. and then move it away, and check that the backlight goes off when the distance (AUTO OFF distance) is the specified value.
8) Input the following data to page: D, address: 40 to 45.
   Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	40	41	42	43	44	45
Data	3F	00	24	24	82	00

9) Set data: 00 to page: 0, address: 01.

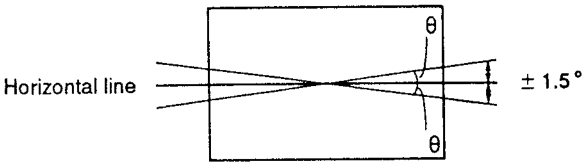
1-5. MONOCHROME ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (CCD-TR820E/TR825E)

1-5-1. Horizontal Slant Check

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSP) Monoscope section
Specified Value	± 1.5°

Adjusting method:

1) Adjust RV904 (BRIGHT) so that the CRT can be seen easily and clearly.
2) Check that the difference between the horizontal line and the tilt of the black mask satisfies the specified value.



Specified value: The image should be within ± 1.5° of the horizontal line.

Fig. 5-1-15.

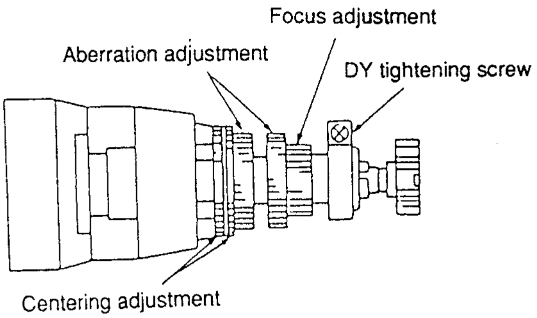


Fig. 5-1-16.

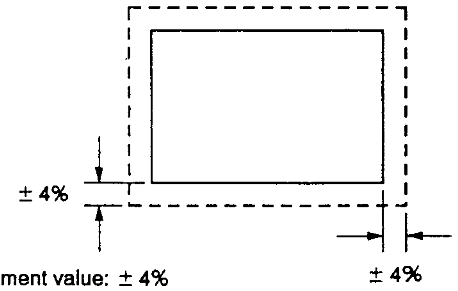
1-5-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSP) Monoscope section
Specified Value	± 4%

Adjusting method:

1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 5-1-16.)

   Note: As the centering position changes due to earth magnetism, rotate it 360° in the horizontal direction, and adjust with the center section of the modifying position.



Adjustment value: ± 4%

Fig. 5-1-17.

1-5-3. Focus Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSP) Monoscope section

Adjusting method:

1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 5-1-16.)

1-5-4. Aberration Adjustment

Mode	VTR stop
Signal	Dot pattern
Specified Value	$b_1 \leqq 2 \cdot a_1$ $b_2 \leqq 0.8 \cdot a_2$

Adjusting method:

1) Adjust the aberration adjustment ring so that the tracing of the dot satisfies the specified value.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

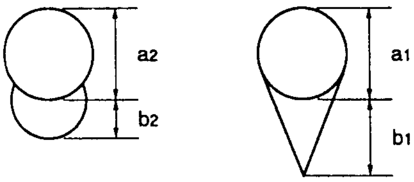


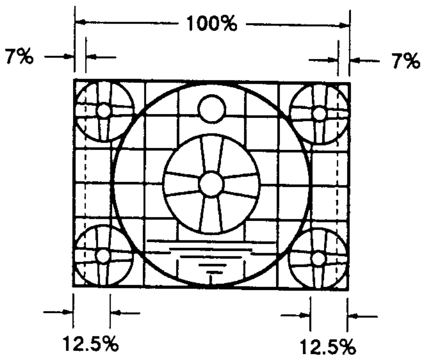
Fig. 5-1-18.

1-5-5. Horizontal Amplitude Adjustment (VF-99 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSP) Monoscope section
Adjusting Element	C909 (SOL901) (Fig. 5-1-21.)
Specified Value	14 ± 6%

Adjusting method:

1) Rotate RV903, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV904 so that the brightness is the normal level.
3) Solder or unsolder SOL901 pattern of the H size adjustment capacitor (C909) to "short" or "open", so that the horizontal direction over scan becomes 14 ± 6% (Left and right totals).



SOL901	Size H
Open	Small
Short	Big

Fig. 5-1-19.

1-5-6. Vertical Amplitude Adjustment (VF-99 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSP) Monoscope section
Adjusting Element	RV903 (Fig. 5-1-21.)
Specified Value	10 ± 3%

Adjusting method:

1) Adjust RV903 so that the vertical direction over scan becomes 10 ± 3% (Top and bottom totals).

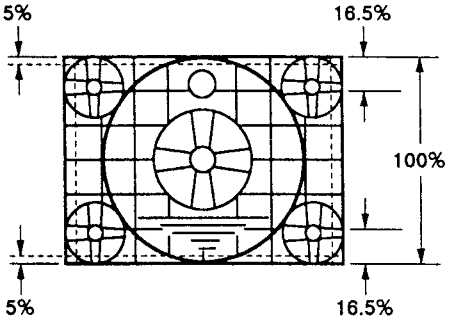


Fig. 5-1-20.

1-5-7. Brightness Adjustments (VF-99 board)

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSP) Monoscope section
Specified Value	RV904 (Fig. 5-1-21.)

Adjusting method:

1) Rotate RV904, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

1-5-8. Horizontal Amplitude, Vertical Amplitude, Focus Check

"1-5-5. Horizontal Amplitude Adjustment" and "1-5-6. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform "1-5-7. Brightness, Contrast Adjustments" again.

Moreover, check the focus, and if it found to be vague, perform "1-5-3. Focus Adjustment" and "1-5-4. Aberration Adjustment".

ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

VF-99 BOARD (SIDE A)

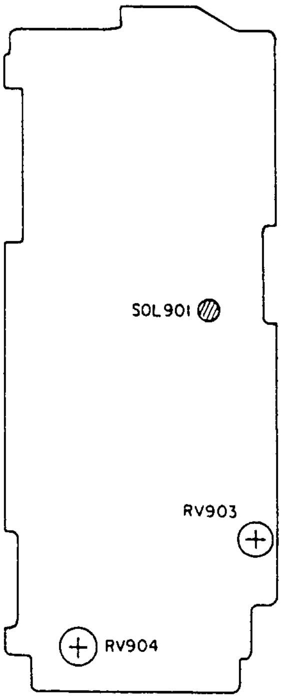


Fig. 5-1-21.

5-2. MECHANICAL SECTION ADJUSTMENT

Mechanism Parts Adjustments

For details on the adjustments and checks of mechanical section and replacements of mechanism parts, refer to the separate volume- "8 mm Video Mechanism Adjustment Manual VII B Mechanism".

2-1. OPERATING WITHOUT A CASSETTE

1) Refer to "Section 2 DISASSEMBLY" and supply the power with the cabinet removed. (So that the mechanical deck can be operated.)
2) Connect the adjusting remote commander to the LANC terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Close the cassette compartment without loading a cassette and complete loading.
5) Set data: 01 to page: 0, address: 01.
6) Set data: 01 to page: F, address: 29, and press the PAUSE button of the adjusting remote commander.
7) Set data: 04 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
8) Disconnect the power supply of the unit.

By carrying out the above procedure, the unit can be operated without loading a cassette.
Be sure to carry out "Processing after Operations" after checking the operations.
Set the data of page: D, address: 10 to the following if the sensor ineffective mode, forced PLAYER (VTR) power supply ON mode or forced camera power supply ON mode are to be used together.

Forced VTR power supply ON mode..........06
Forced camera power supply ON mode......05

[Processing after Operations]

1) Set data: 01 to page: 0, address: 01.
2) Set data: 00 to page: F, address: 29, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 0, address: 01.
5) Disconnect the power supply of the unit.

2-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustments

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote commander to the LANC terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 01.
5) Select page: F, address: 29, and set data: 04 and press the PAUSE button of the adjusting remote commander.
(Be sure to perform "Processing after operations" after completing adjustments.)
6) Connect the oscilloscope.
Channel 1: Pin ⑥ of CN207 of VC-190 board
External trigger: Pin ③ of CN207 of VC-190 board
(Connect the oscilloscope via the CPC-7 jig (J-6082-382-A).)
7) Playback the alignment tape for tracking.
WR5-1NP: For NTSC model
WR5-1CP: For PAL model
8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit.
If not flat, perform necessary adjustment according to the separate "8 mm Video Mechanical Adjustment Manual VII (B Mechanism)".
9) Perform "Processing after operations", after completing adjustments.

CN207 of VC-190 board

Pin No.	Signal Name	Pin No.	Signal Name
1	PB PCM RF	9	EZ I/O
2	REC RF	10	EVF UNREG (–)
3	RF SWP	11	EVF UNREG
4	CAP FG	12	EVF VG
5	REG GND	13	VCO
6	PB RF	14	BPF MON
7	RF AGC IN	15	RF AGC OUT
8	REC AFM	16	AFC FO

[Processing after operations]

1) Connect the adjusting remote commander, and turn on the HOLD switch.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: F, address: 29, and set data: 00.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 0, address: 01, and set data: 00.
6) Remove the power supply from the unit.

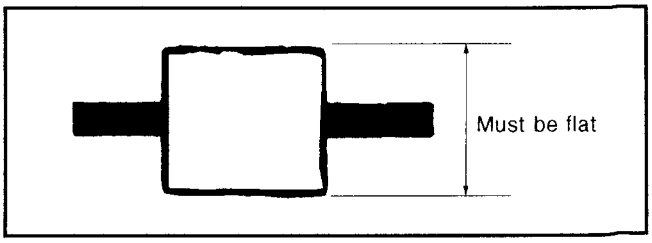


Fig. 5-2-1.

5-3. VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 5-66.

3-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

3-1-1. Equipments to be Used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape

    [For NTSC model)
    - For tracking adjustment (WR5-1NP)
      Part Code: 8-967-995-02
    - For video frequency characteristics adjustment (WR5-7NE) Part Code: 8-967-995-13
    - For checking Standard 8 mode operations
      For LP (WR5-4NL)
      Part Code: 8-967-995-51
      For SP (WR5-5NSP)
      Part Code: 8-967-995-42
      Note: The following alignment tapes can also be used.
      1) WR5-4NSP (8-967-995-41)
    - For checking Hi8 mode operations
      For SP (WR5-8NSE)
      Part Code: 8-967-995-43
      For LP (WR5-8NLE)
      Part Code: 8-967-995-52
    - For checking AFM stereo operations (WR5-9NS)
      Part Code: 8-967-995-23
      For checking BPF adjustment (WR5-11NS)
      Part Code: 8-967-995-71

    [For PAL model]
    - For tracking adjustment (WR5-1CP)
      Part Code: 8-967-995-07
    - For video frequency characteristics adjustment (WR5-7NE) Part Code: 8-967-995-18
    - For checking Standard 8 mode operations
      For LP (WR5-4CL)
      Part Code: 8-967-995-56
      For SP (WR5-5CSP)
      Part Code: 8-967-995-47
      Note: The following alignment tapes can also be used.
      1) WR5-3CL (8-967-995-36)
      2) WR5-4CSP (8-967-995-46)
    - For checking Hi8 mode operations
      For SP (WR5-8CSE)
      Part Code: 8-967-995-48
      For LP (WR5-8CLE)
      Part Code: 8-967-995-57
    - For checking AFM stereo operations (WR5-9CS)
      Part Code: 8-967-995-28
      For checking BPF adjustment (WR5-11CS)
      Part Code: 8-967-995-76

12) Remote commander for adjustment (J-6082-053-B)
13) CPC-7 jig Part Code: J-6082-382-A
14) Power code Part Code: J-6082-223-A
15) AFM DEV jig (J-6082-312-A)
16) IR Receiver jig (J-6082-383-A)

3-1-2. Precautions in Adjustment

1) The adjustments of this unit are performed in the VTR mode (S VIDEO terminal input or VIDEO terminal input mode) or in the camera mode.
To set to the VTR mode, set the power switch to "VTR or PLAYER" or set to the "forced VTR power supply ON mode" (Note 1) using the adjusting remote commander.
To set to the camera mode, set the power switch to "CAMERA" or set to the "forced camera+VTR power supply ON mode" (Note 2) using the adjusting remote commander.
After completing adjustments, be sure to exit the "forced VTR power supply ON mode" or "forced camera+VTR power supply ON mode". (Note 3)
2) The front panel block (MI-29 board) need not be connected except in "IR Transmitter Adjustments" and "Battery End Adjustments". To remove, disconnect the following connector.
    1. CN303 (26P 0.5 mm) of MI-29 board
    (Refer to Page 5-60)
3) The viewfinders (VF-111, 112 boards (COLOR EVF model), VF-99 board (B/W EVF model) need not be connected except in "Battery End Adjustments". To remove, disconnect the following connector.
    1. CN111 (20P. 0.5 mm) of VC-190 board
4) By setting the "forced power supply ON mode", the video section can be operated even if the cabinet (R) (power switch, control switch block) has been removed. When removing the cabinet (R), disconnect the following connector. However, as removing CN1953 means removing the lithium 3V power supply, data such as date, time, user-set menus will be lost. After adjustments, reset these data. If CN1953 has been removed, the self-diagnosis data, data on history of use (total drum rotation time, date of when the user first turned the power ON, and the date of when condensation occurred the last time) will be lost. Before removing, note down the self-diagnosis data and data of page: 3, address: E0 to E9. (Refer to the "Service Mode" for the data on the history of use.)
    1. CN1953 of VC-190 board (28P, 0.5 mm)
After completing the adjustment, be sure to exit the "forced power supply ON mode".
5) The lens block (CD-166 board) and accessory shoe are not required for the adjustments of the video section (except in "Battery End Adjustment"). To remove, disconnect the following three connectors.
    1. CN112 of VC-190 board (16P, 0.5 mm)
    2. CN113 of VC-190 board (23P, 0.5 mm)
    3. CN205 of VC-190 board (10P, 0.5 mm)
    (CCD-TR930/TR825E/TR920E)

Note 1: Setting the "forced VTR power supply ON mode"
1) Set data: 01 to page: 0, address: 01.
2) Set data: 02 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
Hereafter, VTR operations can be performed even if the cabinet (R) has been removed.
After completing adjustments, be sure to exit the "forced VTR power supply ON mode".

Note 2: Setting the "forced camera+VTR power supply ON mode" (camera mode)
1) Set data: 01 to page: 0, address: 01.
2) Set data: 03 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
Hereafter, VTR operations can be performed even if the cabinet (R) has been removed.
After completing adjustments, be sure to exit the "forced power supply ON mode".

Note 3: Exiting the "forced power supply ON mode"
1) Set data: 01 to page: 0, address: 01.
2) Set data: 00 to page: D, address: 10, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 0, address: 01.

3-1-3. Connector for Adjustments

Some video section adjustment points are concentrated on the VC-190 board CN207. Connect the measuring instruments via a CPC-7 jig (J-6082-382-A).

Pin No.	Signal Name	Pin No.	Signal Name
1	PB PCM RF	9	EZ I/O
2	REC RF	10	EVF UNREG (–)
3	RF SWP	11	EVF UNREG
4	CAP FG	12	EVF VG
5	REG GND	13	VCO
6	PB RF	14	BPF MON
7	RF AGC IN	15	RF AGC OUT
8	REC AFM	16	AFC FO

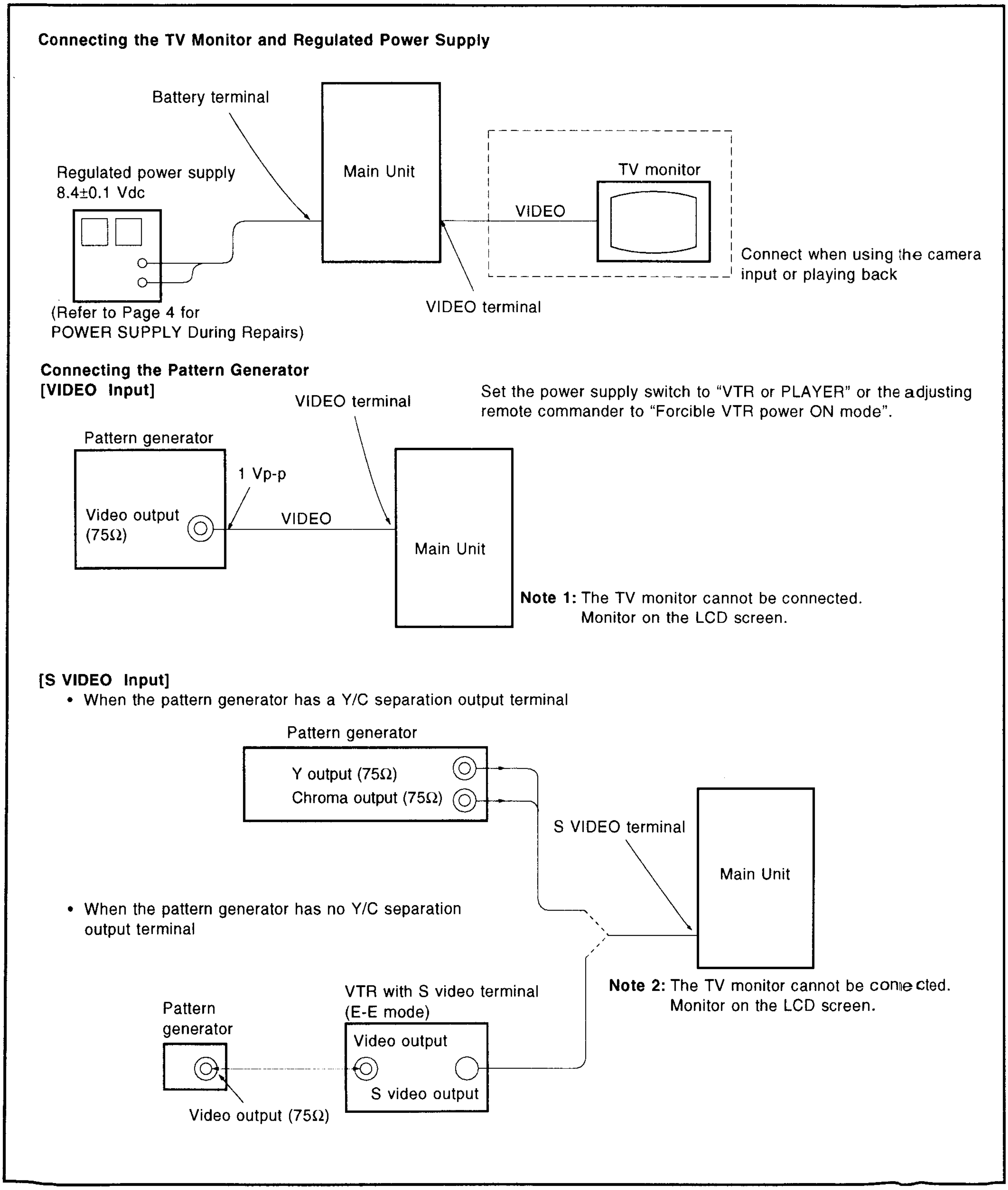
Table 5-3-1.

3-1-4. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 5-3-1 according to the input terminal specifications (VIDEO input or S VIDEO input), and perform the adjustments.
The input terminal is specified in the ( ) in the signal column. Either input terminal can be used when there are no specifications.

Note 1: If the VIDEO input is used for adjustments which specify for the S VIDEO input to be used, the product specifications of the unit may not be satisfied in some cases. Be sure to perform according to the specifications.

Note 2: When adjustments are performed with the S video output terminal VTR as the signal source, the efficiencies of the unit may be affected by the VTR. It is recommended that a pattern generator with a Y/C separation output terminal be used as much as possible.


Connecting the TV Monitor and Regulated Power Supply
Battery terminal
Regulated power supply
8.4±0.1 Vdc
Main Unit
TV monitor
VIDEO
VIDEO terminal
Connect when using the camera input or playing back
(Refer to Page 4 for POWER SUPPLY During Repairs)
Connecting the Pattern Generator
[VIDEO Input]
VIDEO terminal
Pattern generator
1 Vp-p
Video output (75Ω)
VIDEO
Main Unit
[S VIDEO Input]
Pattern generator
Y output (75Ω)
Chroma output (75Ω)
S VIDEO terminal
Main Unit
Pattern generator
VTR with S video terminal (E-E mode)
Video output
S video output
Video output (75Ω)

Set the power supply switch to "VTR or PLAYER" or the adjusting remote commander to "Forcible VTR power ON mode".

Note 1: The TV monitor cannot be connected. Monitor on the LCD screen.

- When the pattern generator has a Y/C separation output terminal
- When the pattern generator has no Y/C separation output terminal

Note 2: The TV monitor cannot be connected. Monitor on the LCD screen.

Fig. 5-3-1.

3-1-5. Checking the Input Signals

Because the video signal obtained from the pattern generator is used as the adjustment signal for adjusting the VTR section, the video output signal must satisfy the given specifications.

1. S VIDEO input

Connect the oscilloscope to the Y signal terminal of the S VIDEO terminal, and check that the sync signal of the Y signal is approximately <0.286> [0.30]V and that the amplitude of the video section is approximately <0.714> [0.70]V. (When a VTR with the S VIDEO output terminal is used, also check that the chroma signal and burst signal have not remained.) Connect the oscilloscope to the chroma signal terminal of the S VIDEO terminal, and check that the burst signal amplitude of the chroma signal is approximately <0.286>[0.30]V and flat, and that the amplitude ratio of the burst signal to the chroma signal is 0.30:0.66. The Y and chroma signals used in the adjustment are shown in Fig. 5-3-2.

< >: NTSC model (CCD-TR930)
[ ]: PAL model (CCD-TR820E/TR825E/TR920E)

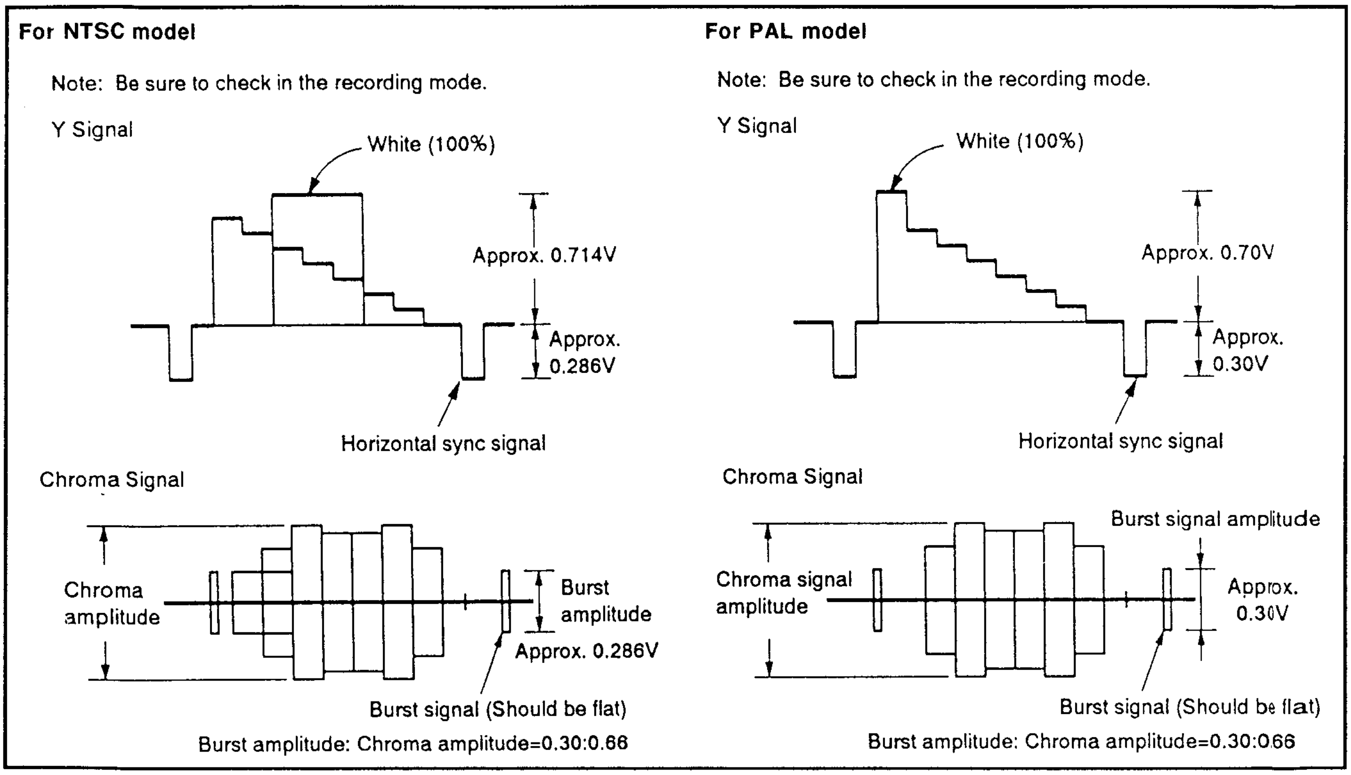

For NTSC model
Note: Be sure to check in the recording mode.
Y Signal
White (100%)
Approx. 0.714V
Approx. 0.286V
Horizontal sync signal
Chroma Signal
Chroma amplitude
Burst amplitude
Approx. 0.286V
Burst signal (Should be flat)
Burst amplitude: Chroma amplitude=0.30:0.66
For PAL model
Note: Be sure to check in the recording mode.
Y Signal
White (100%)
Approx. 0.70V
Approx. 0.30V
Horizontal sync signal
Chroma Signal
Burst signal amplitude
Chroma signal amplitude
Approx. 0.30V
Burst signal (Should be flat)
Burst amplitude: Chroma amplitude=0.30:0.66

Fig. 5-3-2. Color bar signal of pattern generator

2. VIDEO input

Connect the oscilloscope to the VIDEO terminal, and check that the sync signal amplitude of the video signal is approximately <0.286> [0.30]V, the amplitude of the video section is approximately <0.714> [0.70]V, the amplitude of the burst signal is approximately <0.286> [0.30]V and flat, and that the level ratio of the burst signal to the "red" signal is 0.30 : 0.66.

The video signal (color bar) used for adjusting the VTR section is shown in Fig. 5-3-3.

< >: NTSC model (CCD-TR930)
[ ]: PAL model (CCD-TR820E/TR825E/TR920E)

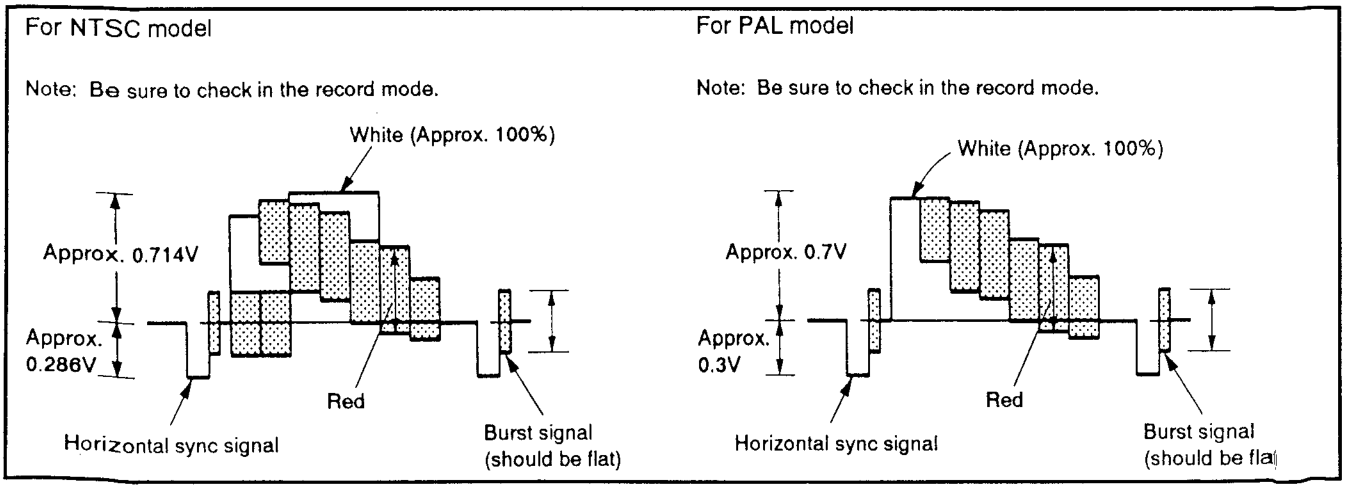

For NTSC model
Note: Be sure to check in the record mode.
White (Approx. 100%)
Approx. 0.714V
Approx. 0.286V
Red
Horizontal sync signal
Burst signal (should be flat)
For PAL model
Note: Be sure to check in the record mode.
White (Approx. 100%)
Approx. 0.7V
Approx. 0.3V
Red
Horizontal sync signal
Burst signal (should be flat)

Fig. 5-3-3. Color Bar Signal of Pattern Generator

3-1-6. How to Set the REC Mode in the Model without REC switch (AEP, UK model)

Note: The chroma signal cannot be input and recorded.

1. REC key forbidden accept mode cancel
   1. Connect the adjustment remote commander to the LANC terminal.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjustment remote commander.
   4. Select the page: 0 address: 01, and set the data to 01.
   5. After memorizing data of address: 12 of page: D, Set data: FE to the address.
   6. Press PAUSE button on the adjustment remote commander.

The REC key is accepted through the above procedure.

2. REC mode setting
   1. Turn off the HOLD switch of the adjusting remote commander.
   2. Press REC buttons of the adjusting remote commander.
   3. Perform "3. Procedure after completed the adjustment" after completing adjustment .

3. Procedure after completed the adjustment

   Be sure to return the mode to REC key forbideden accept mode after adjustment.
   1. Connect the adjustment remoter commander.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjustment remote commander.
   4. Select the page: 0 address: 01, and set the data to 01.
   5. Set data memorized at step 1)-5 to address: 12 of page: D.
   6. Press PAUSE button on the adjustment remote controller.
   7. Select the page: 0 address: 01, and set the data to 00.

3-1-7. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Record -ing mode	Tape type	Tape speed	Usage
Tracking WR5-1NP (NTSC) WR5-1CP (PAL)	Standard 8 mm	MP	SP	Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7NE (NTSC) WR5-7CE (PAL)	Hi8	ME	SP (NTSC) LP (PAL)	Frequency characteristics adjustment
Operation check (SP mode) WR5-5NSP (NTSC) WR5-5CSP (PAL)	Standard 8 mm	MP	SP	Checking operations
Operation check (SP mode) WR5-8NSE (NTSC) WR5-8CSE (PAL)	Hi8	ME	SP	
Operation check (LP mode) WR5-4NL (NTSC) WR5-4CL (PAL)	Standard 8 mm	MP	LP	
Operation check (LP mode) WR5-8NLE (NTSC) WR5-8CLE (PAL)	Hi8	ME	LP	
AFM stereo Operation check WR5-9NS (NTSC) WR5-9CS (PAL)	Standard 8 mm	MP	SP	AFM stereo Checking operations
BPF adjustment WR5-11NS (NTSC) WR5-11CS (PAL)	Standard 8 mm	MP	SP	BPF adjustment

Tape type

MP.... Particle type metal tape

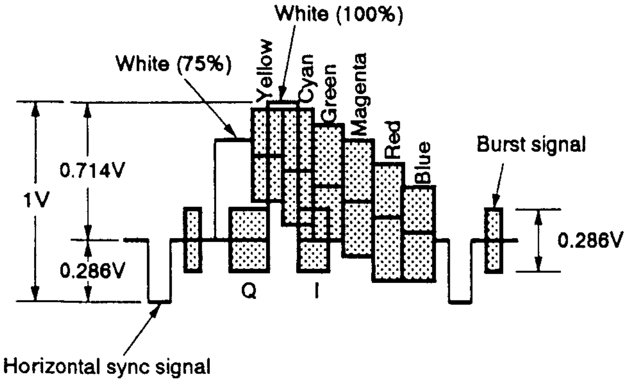
ME ... Evaporated type metal tape

Table 5-3-2.

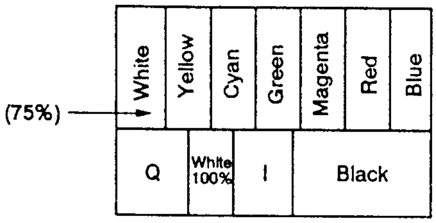
Fig. 5-3-4. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the VIDEO terminal (Terminated at 75 Ω).

For NTSC model

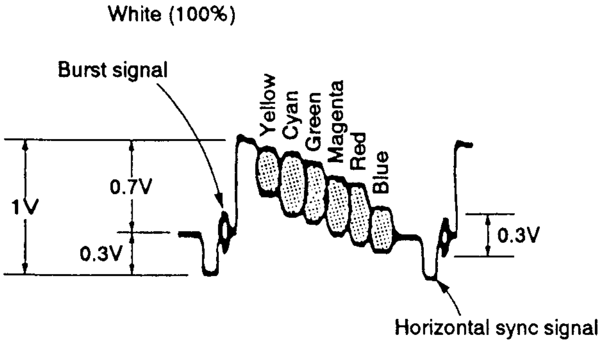

White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst signal
0.714V
1V
0.286V
0.286V
Q
I
Horizontal sync signal

Color bar signal waveform

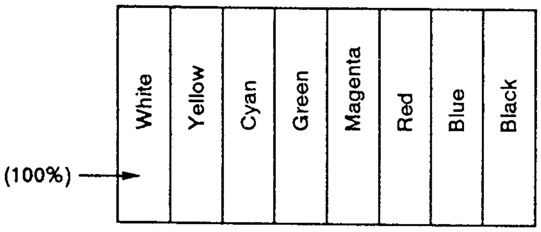

(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Q
White 100%
I
Black

Color Bar Pattern

For PAL model


White (100%)
Burst signal
Yellow
Cyan
Green
Magenta
Red
Blue
0.7V
1V
0.3V
0.3V
Horizontal sync signal

Color bar signal waveform


(100%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Black

Color bar pattern

Fig. 5-3-4. Color Bar Signals of the Alignment Tape

3-1-8. Input/Output Level and Impedance

Video input/output
Phono jack, 1 Vp-p, 75Ω,
unbalanced, sync negative
S video input/output
4-pin mini DIN
Luminance signal:
1Vp-p, 75Ω, unbalanced, sync negative
Chrominance signal:
0.3Vp-p 75Ω, unbalanced
Audio input/output
Phono jack,
Input: –7.5 dBs, input impedance more than 47 kΩ
Output: –7.5 dBs, (at load impedance 47 kΩ), impedance less than 2.2 kΩ

3-1-9. Recording Mode (Standard 8/Hi8) switching

The record mode (Standard 8/Hi8) of this unit switches as shown in the following table. The playback mode (Standard 8/Hi8) switches automaticaly according to the recording mode of the tape played back.

Tape Used	Recording Mode
ME	Hi8
Hi8 MP	
MP	Standard 8

3-1-10. Service Mode

Additional note on adjustment

Note: After the completion of the all adjustments, cancell the service mode by either of the following ways.

1) Unplug the main power supply and remove the lithium battery. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting.)
2) After data on page: D and F is restored, return data of the address: 01 on page: 0 to 00. And when data on page: 2 or page: 3 is changed, return the data to the original condition.

1. Test mode setting

Set/release each test mode. Set data: 01 to page: 0, address: 01 before setting the data of page D and F.

Page F	Address 29

Data	Function
00	Normal
01	Test mode Various emergency prohibitions and releases Drum emergency, capstan emergency, loading motor emergency, reel emergency, tape top and end, DEW detection

Page D	Address 10

Data	Function
00	Normal
01	Camera power ON
02	VTR power ON
03	Camera+VTR power ON

* For page D and F, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that in this case, the test mode will not be released even if the main power has been turned off (8.4 Vdc).

* Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander. And set data: 00 to page: 0, address: 01.

2. Emergency Memory Address

Page F	Address 10 to 1B

Address	Contents
10	1st EMG code
12	Upper: MSW code when the mechanism starts shifting the 1st time Lower: MSW code when the 1st emergency occurs
13	Lower: Target MSW code of the 1st emergency occurs
14	2nd EMG code
16	Upper: MSW code when the mechanism starts shifting the 2nd time Lower: MSW code when the 2nd emergency occurs
17	Lower: Target MSW code of the 2nd emergency occurs
18	Last EMG code
1A	Upper: MSW code when the mechanism starts shifting the last time Lower: MSW code when the last emergency occurs
1B	Lower: Target MSW code of the last emergency occurs

When there are no emergency, data 00 will be written in the above addresses (10 to 1B). When the first emergency occurs, the data corresponding to the emergency will be written in the address (10 to 13) for this first emergency. In the same way, when the second emergency occurs, the data corresponding to the emergency will be written in the address (14 to 17) for this second emergency.

The data corresponding to the emergency occurring the last will be written in the address (18 to 1B) for this last emergency. Therefore the data of addresses 18 to 1B are renewed each time an emergency occurs.

Note 1: Be sure to rewrite the data of addresses 10 to 1B to 00 after repairs/adjustments.

Note 2: When rewriting the data, be sure to press the PAUSE button of the remote commander after setting the data.

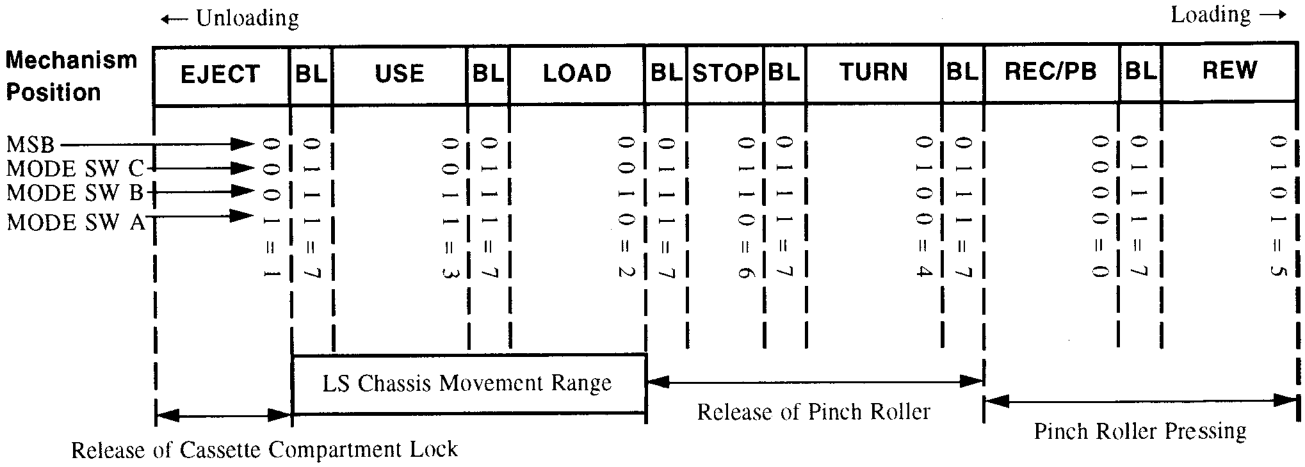
2-1. EMG CODE (Emergency Code)

The codes shown in the following table which correspond to errors that occur are recorded in addresses 10, 14, and 18.

Code	Type of Emergency
00	No error
10	Loading motor time-out during load
11	Loading motor time-out during unload
20	T reel emergency (reel slack) during unloading
21	S reel emergency (reel slack) during unloading
22	T reel emergency
23	S reel emergency
30	FG emergency at the start up of the capstan
31	FG emergency during the normal rotation of the capstan
40	FG emergency at the start up of the drum
41	PG emergency at the start up of the drum
42	FG emergency during the normal rotation of the drum
43	PG emergency during the normal rotation of the drum
44	Phase emergency during the normal rotation of the drum

2-2. MSW Codes

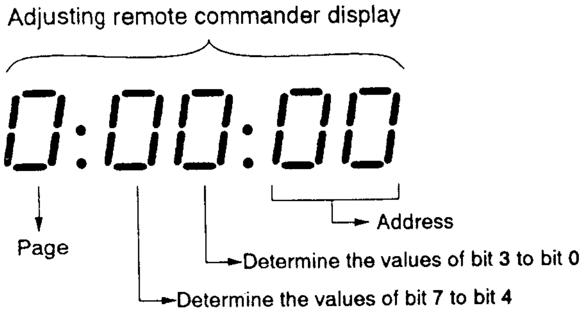
- The lower parts of the data of addresses 12, 16 and 1A represent the MSW codes (mode switch, mechanism position) when errors occurs.
- The upper parts of the data of addresses 12, 16 and 1A represent, when the mechanism position is to be moved, the MSW codes at the start of movement (when moving the loading motor).
- The lower parts of the data of addresses 13, 17 and 1B represent the MSW codes of the desired movement when the mechanism position is to be moved.


← Unloading
Loading →
Mechanism Position
EJECT
BL
USE
BL
LOAD
BL
STOP
BL
TURN
BL
REC/PB
BL
REW
MSB
MODE SW C
MODE SW B
MODE SW A
0001 = 1
0111 = 7
0011 = 3
0111 = 7
0010 = 2
0111 = 7
0110 = 6
0111 = 7
0100 = 4
0111 = 7
0000 = 0
0111 = 7
0101 = 5
LS Chassis Movement Range
Release of Pinch Roller
Pinch Roller Pressing
Release of Cassette Compartment Lock

Mechanism Position	MSW Code	Contents
EJECT	1	Position at which the cassette compartment lock is released. The mechanism will not move any further in the unloading direction.
BL	7	BLANC code. Between two codes. The mechanism will not be stopped by this code while it is operating.
USE	3	EJECT completion position. When the cassette is ejected, the mechanism will stop at this position.
LOAD	2	Code during loading/unloading. Code that is used while the LS chassis is moving.
STOP	6	Normal stop position. The pinch roller separates, the tension regulator returns, and the brakes of both reels turn on.
TURN	4	Position at which is used when the pendulum gear swings from S to T or from T to S.
RECP/PB	0	PB, REC, CUE, REV, PAUSE, FF positions. The pinch roller is pressed and tension regulator is on.
REW	5	REW position. REW are carried at this position. The mechanism will not move any further in the loading direction.

3. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is "1" or "0".


Adjusting remote commander display
0:00:00
Page
Address
Determine the values of bit 3 to bit 0
Determine the values of bit 7 to bit 4

	Remote controller display	Bit value			
		bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ→	8	1	0	0	0
	9	1	0	0	1
	A (A)	1	0	1	0
	B (b)	1	0	1	1
	C (c)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ→	E (E)	1	1	1	0
	F (F)	1	1	1	1

(Example) If the remote commander display data is "8E", bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ.

4. Input/output selection check

Page 3	Address 16

Bit	Function	When bit value = 1	When bit value = 0
0	Not S video terminal input		S video terminal input
1	Not video terminal input		Video terminal input
2	Audio terminal monaural	Monaural	
3			
4			
5			
6			
7			

Using method:

1) Select address: 16 of page: 3.
2) By discriminating the bit value of the display data, the state of the input/output selection can be discriminated.

5. Condensation, head clogging check

Page 3	Address 17

Bit	Function	When bit value = 1	When bit value = 0
0	Condensation state (1 hour preservation)	Condensation	
1	Head clogging	Head clogging	
2			
3			
4			
5			
6			
7			

Using method:
1) Select address: 17 of page: 3.
2) By discriminating the bit value of the display data, the state of the VTR can be discriminated.

6. VTR state check (1)

Page 3	Address 18

Bit	Function	When bit value = 1	When bit value = 0
0	Video/audio circuit PB mode	PB mode	REC/E-E mode
1			
2			
3			
4	Head clog detection when REC	Head clog	
5			
6	Recorded tape playback	Playback	
7	Capstan rotation	Rotation	

Using method:
1) Select address: 18 of page: 3.
2) By discriminating the bit value of the display data, the state of the VTR can be discriminated.

7. VTR state check (2)

Page 3	Address 19

Bit	Function	When bit value = 1	When bit value = 0
0	Eject state	Eject state	
1	Cassette insertion state	Cassette in	
2	Cassette accidental erasure prevention	Accidental erasure prevention state	
3	Tape type	ME	MP
4	Tape type	Hi8 MP	NORMAL MP, ME
5	Crystal variable speed playback	Variable speed playback	
6	Variable speed playback mode	Variable speed playback mode	
7	DRUM	DRUM rotation	Stop

Using method:
1) Select address: 19 of page: 3.
2) By discriminating the bit value of the display data, the state of the VTR can be discriminated.

8. VTR state check (3)

Page 3	Address 1A

Bit	Function	When bit value = 1	When bit value = 0
0	Playback tape recording mode	Hi8	Standard 8
1			
2	Audio mode	Monaural	Stereo
3			
4			
5			
6			
7			

Using method:
1) Select address: 1A of page: 3.
2) By discriminating the bit value of the display data, the state of the VTR can be discriminated.

9. Record of Use Check

Page 3	Address E0 to E9

Address	Function		Remarks
E0	Service status		For checking reset. Normal = "FF". Reset: "00"
E1	Drum rotation counted time (BCD code)	Hour (H)	1000th place digit and 100th place digit of counted time (decimal digit)
E2		Hour (L)	10th place digit and 1st place digit of counted time (decimal digital)
E3		Minute	
E4	User initial power on date (BCD code)	Year	After setting the clock, set the date of power on next
E5		Month	
E6		Day	
E7	Final condensation occurrence date (BCD code)	Year	
E8		Month	
E9		Day	

Using method:
1) The record of use data is displayed at addresses: E0 to E9 of page 3.

Note: This data will be erased when the coin lithium battery is removed (reset).

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Initialization of D, E, F Page Data

If the D, E, F page data is erased due to some reason, perform "1-2. INITIALIZATION OF D, E, F PAGE DATA", of "5-1. CAMERA SECTION ADJUSTMENTS".

2. Battery End Adjustment (VC-190 board)

Set the battery end voltage.
If the voltage is incorrect, the life of the battery will shorten. The image at the battery end will also be rough.

Mode	Camera record
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote commander
Measuring Instrument	
Adjustment Page	D
Specified Value	28 to 2C, 35

Note: The lens block and cabinet (R) must be connected.

Switch setting
1) AUTO FOCUS switch .... OFF
2) VF PW-SAVE (Menu display) .... OFF
(Color EVF model)

Connection:
1) Connect the regulated power supply and the digital voltmeter to the battery terminal as shown in Fig. 5-3-5.

Adjusting method:
1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.1 ± 0.1 Vdc.
2) Turn off the regulated power supply.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Turn on the regulated power supply.
5) Load a cassette, and set to the camera recording mode.
6) Set data: 01 to page: 0, address: 01.
7) Decrease the output voltage of the regulated power supply so that the digital voltmeter display is 5.30 ± 0.01 Vdc.
8) Select page: 3, address: 15, read the adjusting remote commander display data, and this data is named Dref.
9) Set data Dref to page: D, address: 28, and press the PAUSE button of the adjusting remote commander.
10) Set the Dref to page: D, address: 35, and press the PAUSE button of the adjusting remote commander.
11) Convert Dref to decimal notation, and obtain Dref′. (Refer to Table 5-1-5. "Hexadecimal notation – decimal notation conversion table")
12) Calculate D29′, D2A′, D2B′ and D2C′ using following equations (decimal notation calculation).
D29′ = Dref′+8
D2A′ = Dref′+32
D2B′ = Dref′+53
D2C′ = Dref′+64
13) Convert D29′, D2A′, D2B′ and D2C′ to hexadecimal notation, and obtain D29, D2A, D2B and D2C.
14) Set data: D29 to page: D, address: 29, and press the PAUSE button of the adjusting remote commander.
15) Set data: D2A to page: D, address: 2A, and press the PAUSE button.
16) Set data: D2B to page: D, address: 2B, and press the PAUSE button.
17) Set data: D2C to page: D, address: 2C, and press the PAUSE button.
18) Set data: 00 to page: 0, address: 01.

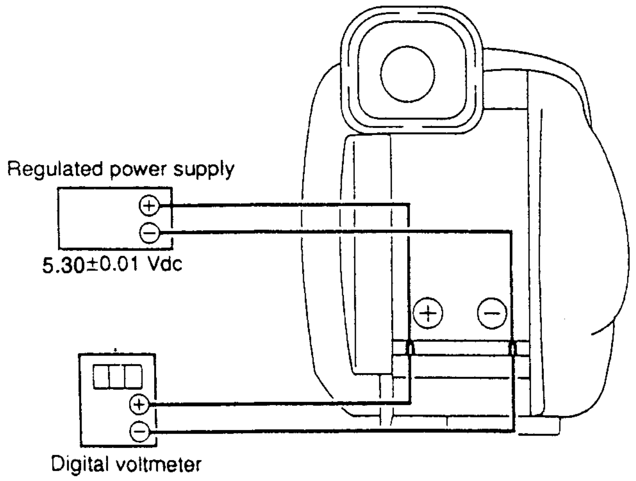


Fig. 5-3-5.

3-3. SERVO SYSTEM ADJUSTMENTS

1. CAP FG Offset Adjustment (VC-190 board)

Improve the capstan servo characteristic. If it is not correct, jitters will increase.

Mode	Playback (SP mode)
Signal	Alignment tape: For operation check (WR5-5NSP (NTSC)) (WR5-5CSP (PAL))
Measurement Point	Pin ④ of CN207 (CAP FG)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	3A
Specified Value	Duty = 50 ± 1.5%

Note : NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 81 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Check that the data of page: 2, address: 02 is 01.
4) Check that Duty of CAP FG signal satisfies the specified value. If not, set data: 00 to page: 2, address: 01, and press the PAUSE button, and then, repeat steps 2) to 4).
5) Set data: 00 to page: 2, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

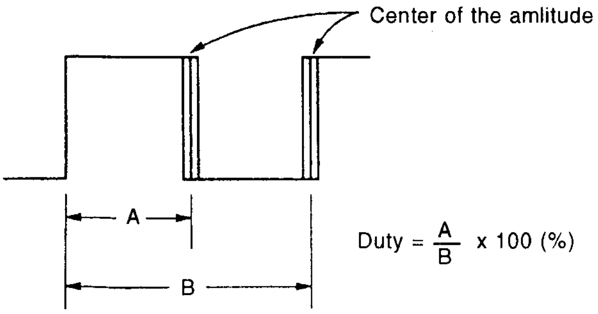


Fig. 5-3-6.

2. Switching Position Adjustment (VC-190 board)

If deviated in this case causes switching noise or jitter on the played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP (NTSC)) (WR5-1CP (PAL))
Measurement Point	CH1: Pin ③ of CN207 (RF SWP) CH2: Pin ⑥ of CN207 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	36, 37
Specified Value	t1 = 0 ± 10 μsec

Note : NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Change the data of page: F, address: 37 and minimize "t1", and press the PAUSE button of the adjusting remote commander. (Coarse adjustment)
3) Change the data of page: F, address: 36, and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 0, address: 01.

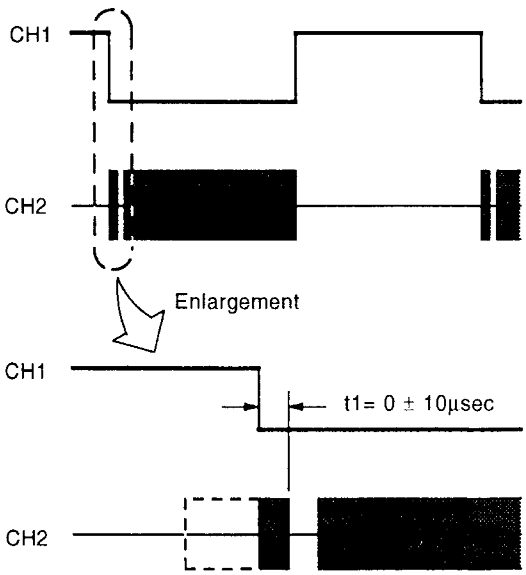


Fig. 5-3-7.

3. NTSC LP mode Switching Position Adjustment (VC-190 board) (CCD-TR930)

If deviated in this case causes switching noise or jitter on the LP mode played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP)
Measurement Point	CH1: Pin ③ of CN207 (RF SWP) CH2: Pin ⑥ of CN207 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	38, 39
Specified Value	t1 = 0 ± 10 μsec

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 40 to page: F, address: 29, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 39 and minimize "t1", and press the PAUSE button of the adjusting remote commander. (Coarse adjustment)
4) Change the data of page: F, address: 38, and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
5) Press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: F, address: 29, and press the PAUSE button of the adjusting remote commander.
7) Set data: 00 to page: 0, address: 01.

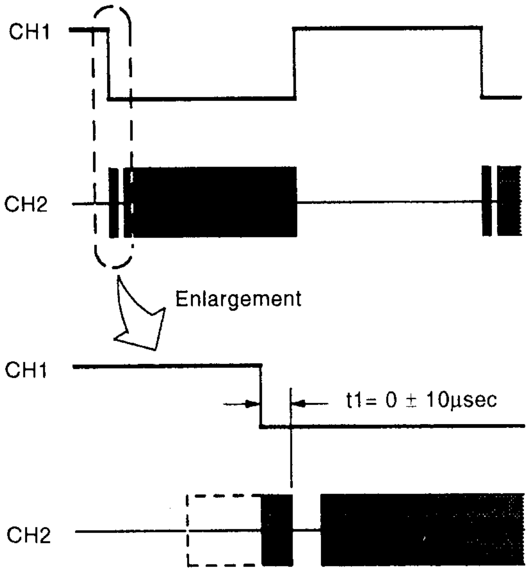


Fig. 5-3-8.

3-4. VIDEO SYSTEM ADJUSTMENTS

Video system adjustments must be performed in the following order.

[Adjusting Order]

1. 28 MHz origin oscillation adjustment
2. Filter fo adjustment
3. Y OUT level adjustment
4. C OUT level adjustment
5. RP filter fo adjustment
6. AFC f0 adjustment
7. NTSC REC Y current adjustment
8. PAL REC Y current adjustment
9. NTSC REC L level adjustment
10. PAL Hi8 REC L level adjustment
11. REC C current adjustment

1. 28 MHz Origin Oscillation Adjustment (VC-190 board)

Set the frequency of the clock for synchronization.
If deviated, the synchronization will be disrupted and the color will become inconsistent.

Mode	VTR stop
Subject	Arbitrary
Measurement Point	Pin ⑫ of IC202 or Pin ⑯ of IC203
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	3B
Specified Value	f = 14318181 ± 71 Hz (NTSC) f = 14187500 ± 70 Hz (PAL)

Note 1: If the x2 frequency is displayed, insert a 1 kΩ resistor between the measuring point and probe.

Note 2: NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 41 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 3B, and set the oscillation frequency (f) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

2. Filter fo Adjustment (VC-190 board)

Minimize the chroma signal residual components during composite video signal input.

Mode	VTR stop
Signal	Color bar (Video input)
Measurement Point	Pin ⑨ of CN207 (EZ I/O)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	5A
Specified Value	Minimum residual chroma signal components

Note 1: Do not insert a plug into the S video terminal.
Note 2: NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 33 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 5A, and minimize the residual chroma signal components (A).
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

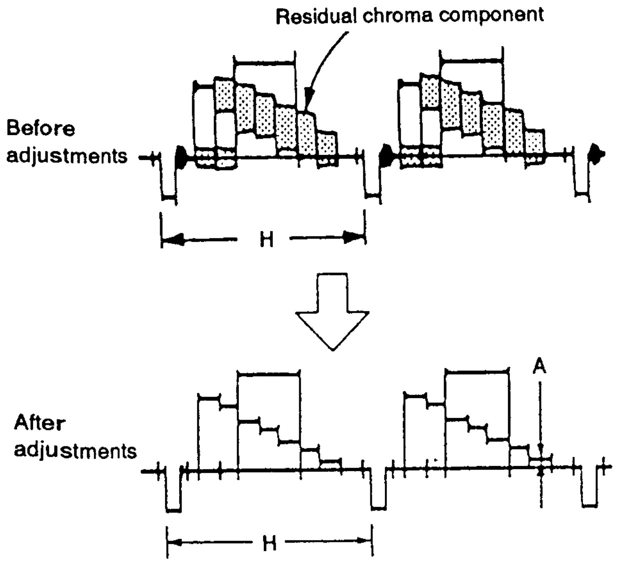


Fig. 5-3-9.

3. Y OUT Level Adjustment (VC-190 board)

Set the Y signal output level.

Mode	VTR stop
Subject	Arbitrary
Measurement Point	Y signal terminal of S VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	56
Specified Value	A = 286 ± 5 mV (NTSC) A = 300 ± 5 mV (PAL)

Note 1: Insert the plug into the S video terminal.
Note 2: NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 41 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 56, and set the SYNC level (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

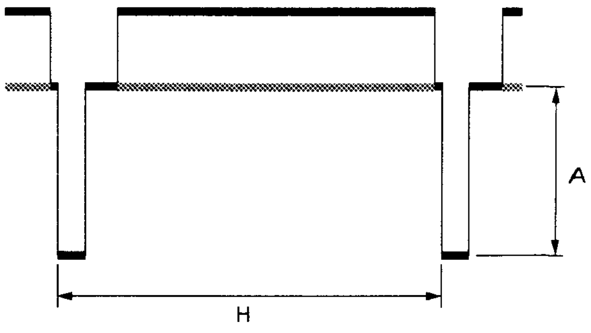


Fig. 5-3-10.

4. C OUT Level Adjustment (VC-190 board)

Set the chroma signal output level.

Mode	VTR stop
Subject	Arbitrary
Measurement Point	Chroma signal terminal of S VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	58
Specified Value	A = 286 ± 5 mV (NTSC) A = 300 ± 5 mV (PAL)

Note 1: Insert the plug into the S video terminal.

Note 2: NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 41 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 58, and set the burst level (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

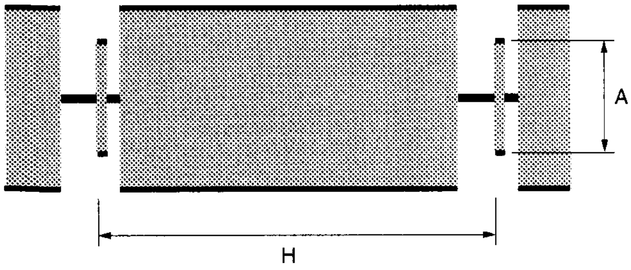


Fig. 5-3-11.

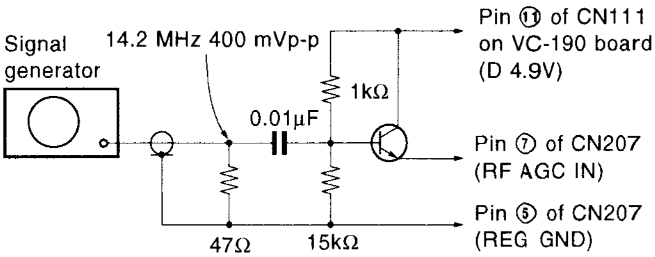
5. RP Filter fo Adjustment (VC-190 board)

Adjust the LPF of the playback RF amplifier.

Mode	VTR stop
Subject	Arbitrary
Measurement Point	Pin ⑮ of CN207 (RF AGC OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	5B
Specified Value	A = Below 10 mVp-p

Connection:

1) Input a 14.2 MHz, 400 mVp-p CW signal to Pin ⑦ of CN207 (RF AGC IN).



Transistor : General NPN transistor (2SC403, etc)
47Ω resistor : 1-249-401-11
1kΩ resistor : 1-249-417-11
15kΩ resistor : 1-249-431-11
0.01µF capacitor : 1-101-004-00

Fig. 5-3-12.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 35 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 5B, and minimize the 14.2 MHz signal level (A).
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

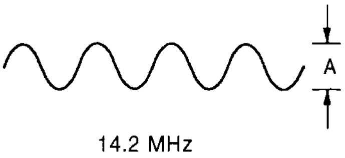


Fig. 5-3-13.

6. AFC fo Adjustment (VC-190 board)

Adjust the pull-in range of the A/D converted clock generator during playback.

Mode	VTR stop
Signal	Color bar (Video input)
Measurement Point	Pin ⑯ of CN207 (AFC fo)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	57
Specified Value	A = 2.2 ± 0.05 Vdc

Note: Do not insert the plug in the S video terminal.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 31 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 57, and set the DC voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

7. NTSC REC Y Current Adjustment
(VC-190 board) (CCD-TR930)

Adjust the Y FM signal recording current.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement point	Pin ② of CN207 (REC RF)
Measuring instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment page	F
Adjustment address	60, 61, 62, 63
Specified value	A = 140 ± 5 mV

Adjusting method:

1) Insert a tape, and set to recording mode.
2) Set data: 01 to page: 0, address: 01.
3) Note down the data of page: F, address: 69, set data: FF, and press the PAUSE button of the adjusting remote commander.
4) Set data: 41 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
5) Change the data of page: F, address: 61, and set the REC Y signal level (A) to the specified value.
6) Press the PAUSE button of the adjusting remote commander.
7) Read the data (D_{61}) of page: F, address: 61.
8) Convert D_{61} to a decimal number, to obtain D_{61} .
   (Refer to Table 5-1-5. Hexadecimal-Decimal conversion Table.)
11) Calculate the adjustment data (decimal) from the following equations (decimal calculation), convert it to a hexadecimal number, and input each adjustment address.
   Address: 60 $D_{60}' = D_{61}'$
   Address: 62 $D_{62}' = D_{61}' + 13$
   Address: 63 $D_{63}' = D_{61}' + 13$
   Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.
12) After setting data noted down at step 3) for page: F, address: 69, press the PAUSE button of the adjusting remote commander.
13) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
14) Set data: 00 to page: 0, address: 01.

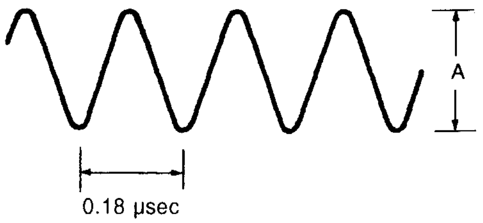


Fig. 5-3-14.

8. PAL REC Y Current Adjustment (VC-190 board) (CCD-TR820E/TR825E/TR920E)

Adjust the Y FM signal recording current.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement point	Pin ② of CN207 (REC RF)
Measuring instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment page	F
Adjustment address	60, 61, 62, 63
Specified value	A = 185 ± 5 mV

Adjusting method:

1) Insert a tape, and set to recording mode.
2) Set data: 01 to page: 0, address: 01.
3) Note down the data of page: F, address: 69, set data: FF, and press the PAUSE button of the adjusting remote commander.
4) Set data: 41 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
5) Change the data of page: F, address: 61, and set the REC Y signal level (A) to the specified value.
6) Press the PAUSE button of the adjusting remote commander.
7) Read the data (D_{61}) of page: F, address: 61.
8) Set D_{61} to address: 60, 62 and 63 of page: F.
   Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.
9) After setting data noted down at step 3) for page: F, address: 69, press the PAUSE button of the adjusting remote commander.
10) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
11) Set data: 00 to page: 0, address: 01.

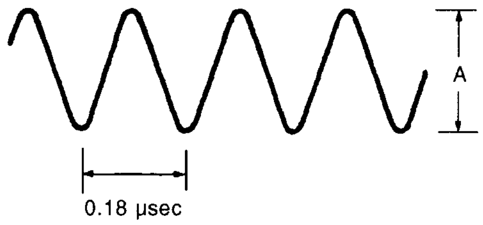


Fig. 5-3-15.

9. NTSC REC L Level Adjustment (VC-190 board) (CCD-TR930)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorate, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement point	Pin ② of CN207 (REC RF)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	68 to 6F
Specified value	A = 8.4 ± 0.4 mV

Note: Do not insert a plug into the AUDIO (R) terminal.

Connection:

1) Remove C1060 (0.01μF , near Pin ⑤ of IC101).
Note: After completing "REC L Level Adjustment" and "REC C Current Adjustment", replace C1060 with new parts (1-162-970-11 CERAMIC CHIP 0.01μF 10% 25V).
2) Connect Pin (63) of IC101 and GND with a 0.01μF capacitor.
   0.01μF capacitor: 1-101-004-00

Adjusting method:

1) Insert a Hi8 ME tape, and set to recording mode.
2) Set data: 01 to page: 0, address: 01.
3) Set data: FF to page: F, address: 68, and press the PAUSE button of the adjusting remote commander.
4) Change the data of page: F, address: 69, and set the REC AFM signal level (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Read the data (D_{69}) of page: F, address: 69.
7) Convert D_{69} to a decimal number, to obtain D_{69}'.
   (Refer to Table 5-1-5. Hexadecimal-Decimal conversion Table.)
8) Calculate the adjustment data (decimal) from the following equations (decimal calculation), convert it to a hexadecimal number, and input each adjustment address.
   Address: 68 $D_{68}' = D_{69}'$
   Address: 6A $D_{6A}' = D_{69}' - 11$
   Address: 6B $D_{6A}' = D_{69}' - 11$
   Address: 6C $D_{6C}' = D_{69}' + 16$
   Address: 6D $D_{6D}' = D_{69}' + 16$
   Address: 6E $D_{6E}' = D_{69}' + 16$
   Address: 6F $D_{6F}' = D_{69}' + 16$
   Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.
9) Set data: 00 to page: 0, address: 01.
10) Perform "REC C Current Adjustment".

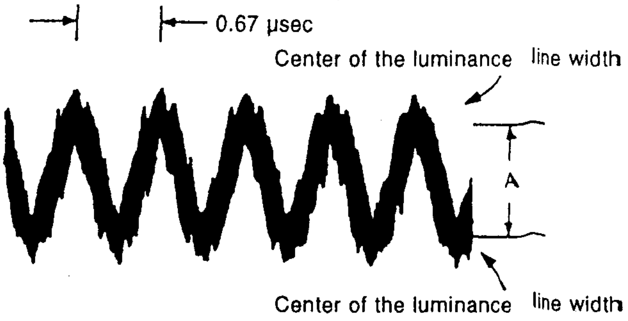

0.67 μsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 5-3-16.

10. PAL REC L Level Adjustment (VC-190 board) (CCD-TR820E/TR825E/TR920E)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorate, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement point	Pin ② of CN207 (REC RF)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	68 to 6F
Specified value	A = 9.8 ± 0.4 mV

Note: Do not insert a plug into the AUDIO (R) terminal.

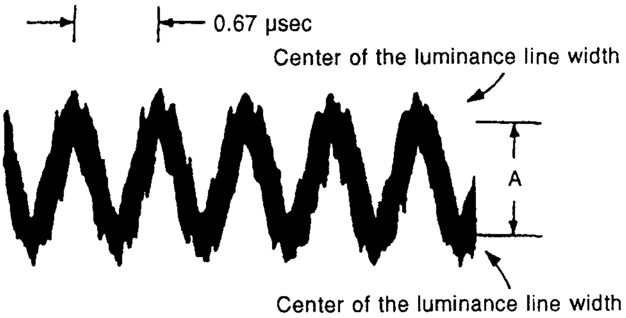


Fig. 5-3-17.

Connection:

1) Remove C1060 (0.01μF , near Pin ⑤ of IC101).
   Note: After completing "REC L Level Adjustment" and "REC C Current Adjustment", replace C1060 with new parts (1-162-970-11 CERAMIC CHIP 0.01μF 10% 25V).
2) Connect Pin (63) of IC101 and GND with a 0.01μF capacitor.
   0.01μF capacitor: 1-101-004-00

Adjusting method:

1) Insert a Hi8 ME tape, and set to recording mode.
2) Set data: 01 to page: 0, address: 01.
3) Set data: FF to page: F, address: 68, and press the PAUSE button of the adjusting remote commander.
4) Change the data of page: F, address: 69, and set the REC AFM signal level (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Read the data (D_{69}) of page: F, address: 69.
7) Convert D_{69} to a decimal number, to obtain D_{69}'.
   (Refer to Table 5-1-5. Hexadecimal-Decimal conversion Table.)
8) Calculate the adjustment data (decimal) from the following equations (decimal calculation), convert it to a hexadecimal number, and input each adjustment address.
   Address: 68 $D_{68}' = D_{69}'$
   Address: 6A $D_{6A}' = D_{69}'$
   Address: 6B $D_{6B}' = D_{69}'$
   Address: 6C $D_{6C}' = D_{69}' + 11$
   Address: 6D $D_{6D}' = D_{69}' + 11$
   Address: 6E $D_{6E}' = D_{69}' + 11$
   Address: 6F $D_{6F}' = D_{69}' + 11$
   Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.
9) Set data: 00 to page: 0, address: 01.
10) Perform "REC C Current Adjustment".

11. REC C Current Adjustment (VC-190 board)

Set the recording current level of REC Chroma signal. If it is lower than its normal level, chroma signal noise in played back picture will increase. If it is set higher, Y signal noises will increase and white modulation noises will be produced.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement point	Pin ② of CN207 (REC RF)
Measuring instrument	Oscilloscope
Adjustment page	F
Adjustment address	72
Specified value	A = 30.3 ± 1.1 mV (NTSC) A = 33.7 ± 1.2 mV (PAL)

Note: NTSC model: CCD-TR930
PAL model: CCD-TR820E/TR825E/TR920E

Connection:

1) Remove C1060 (0.01μF , near Pin ⑤ of IC101).
   Note: After completing "REC L Level Adjustment" and "REC C Current Adjustment", replace C1060 with new parts (1-162-970-11 CERAMIC CHIP 0.01μF 10% 25V).
2) Connect Pin ① of IC101 and GND with a 0.01μF capacitor.
   0.01μF capacitor: 1-101-004-00
3) Connect Pin (63) of IC101 and GND with a 0.01μF capacitor.
   0.01μF capacitor: 1-101-004-00

Adjusting method:

1) Insert a tape, and set to recording mode.
2) Set data: 01 to page: 0, address: 01.
2) Set data: 30 to page: 2, address: 61, and press the PAUSE button of the adjusting remote commander.
3) Set data: 41 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Change the data of page: F, address: 72, and set the REC chroma signal level (A) to the specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
9) Set data: 00 to page: 2, address: 61, and press the PAUSE button of the adjusting remote commander.
10) Set data: 00 to page: 0, address: 01.

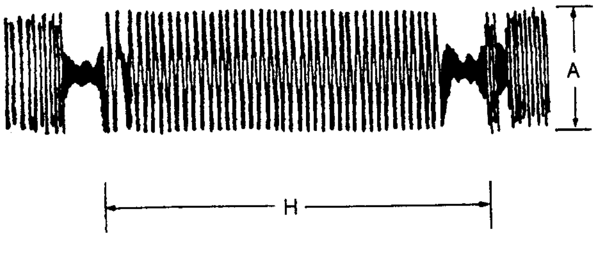


Fig. 5-3-18.

3-5. IR TRANSMITTER ADJUSTMENTS (CCD-TR930)

Adjust using a IR receiver jig (J-6082-383-A).

Switch setting:
LASER LINK ....ON (Red LED is lit)

1. IR Video Carrier Frequency Adjustment (MI-29 board)

Mode	Camera standby
Subject	Arbitrary
Measuring point	TP607 of IR receiver jig (Or Pin ⑯ of IC361 of MI-29 board)
Measuring instrument	Frequency counter
Adjusting page	F
Adjusting address	76
Specified value	f = 11.85 ± 0.05 MHz

Connection of Equipment
Connect the measuring devices as shown in the following figure, and adjust.

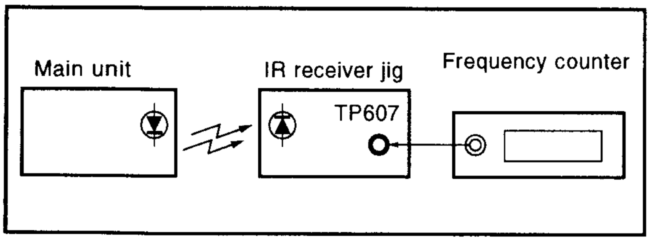


Fig. 5-3-19.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 37 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 76, and set the video carrier frequency (f) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

MI-29 BOARD (SIDE B) **MI-29 BOARD (SIDE A)**

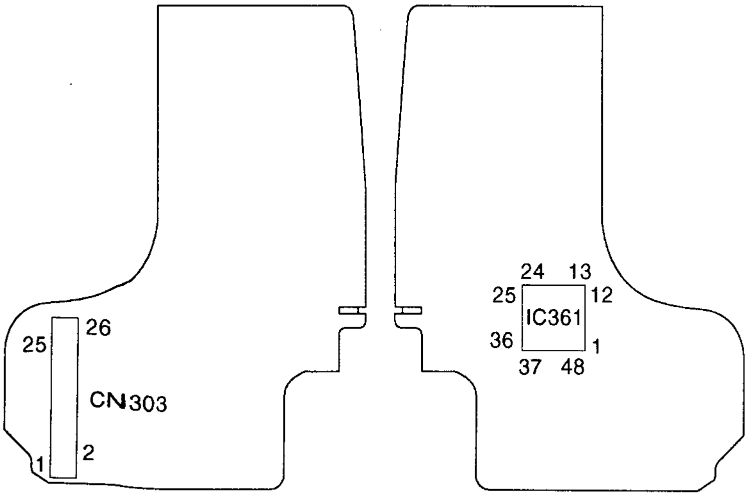


Fig. 5-3-20.

2. IR Video Deviation Adjustment (MI-29 Board)

Mode	Camera standby
Subject	Arbitrary
Measuring point	VIDEO OUT terminal of IR receiver jig (Terminated at 75Ω)
Measuring instrument	Oscilloscope
Adjusting page	F
Adjusting address	73
Specified value	A = 0.87 ± 0.04V

Connection of Equipment
Connect the measuring devices as shown in the following figure, and adjust.

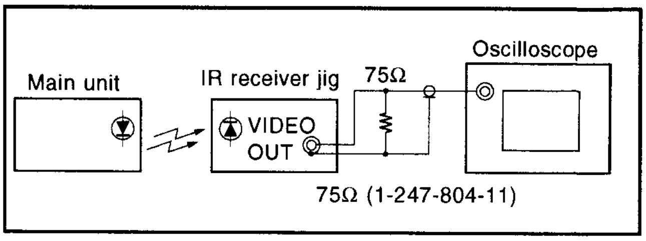


Fig. 5-3-21.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Set data: 39 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: F, address: 73, and set the video signal amplitude (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data: 00 to page: 3, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

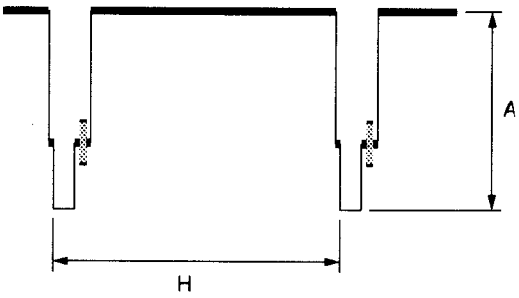


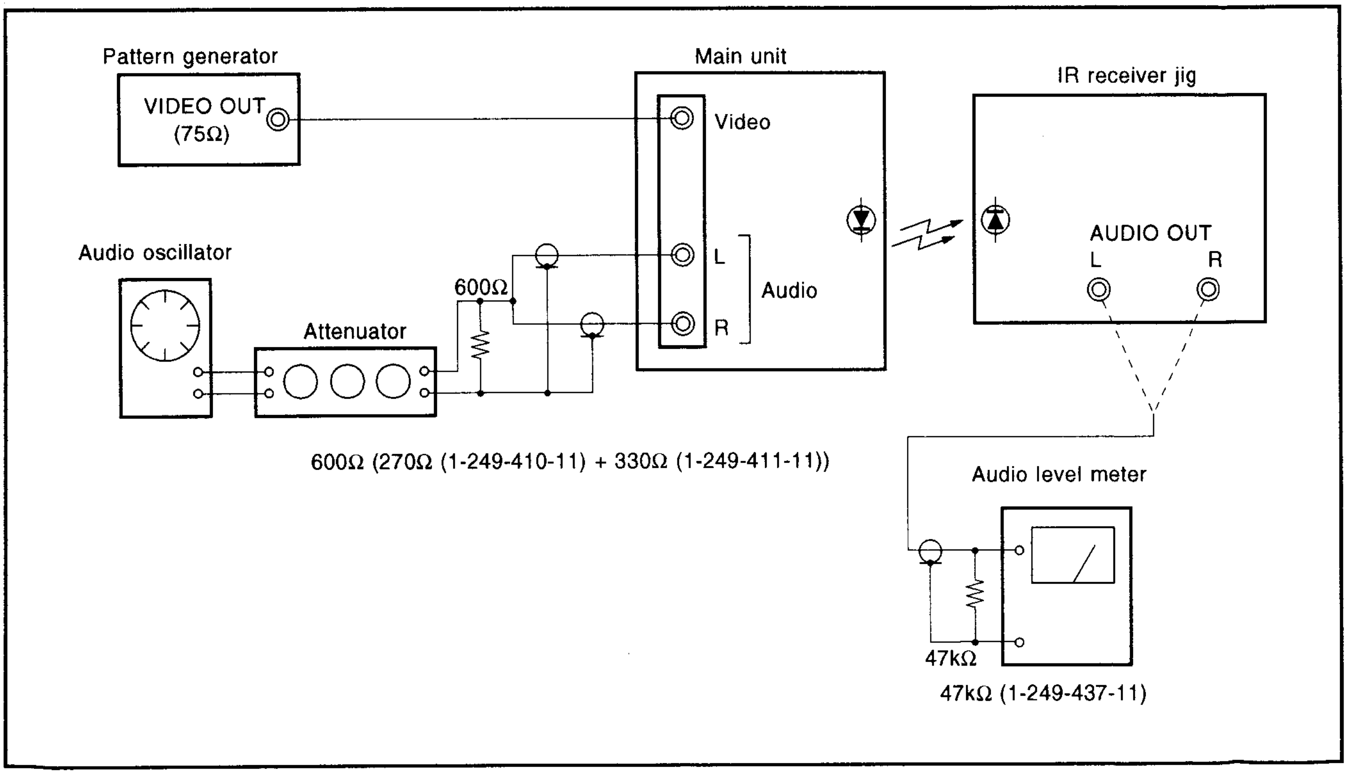
Fig. 5-3-22.

3. IR Audio Deviation Adjustment (MI-29 Board)

Mode	VTR recording
Signal	Audio signal: 400 Hz, -7.5 dBs: Left or right of audio input/output terminal Video signal: Color bar signal: Video input/output terminal
Measuring point	AUDIO OUT L terminal and AUDIO OUT R terminal of IR receiver jig (Terminated at 47 kΩ)
Measuring instrument	Audio level meter
Adjusting page	F
Adjusting address	75
Specified value	-7.5 ± 0.5 dBs

Connection of Equipment

Connect the measuring devices as shown in the following figure, and adjust.



Pattern generator
VIDEO OUT
(75Ω)
Main unit
Video
L
R
Audio
IR receiver jig
AUDIO OUT
L
R
Audio oscillator
600Ω
Attenuator
600Ω (270Ω (1-249-410-11) + 330Ω (1-249-411-11))
Audio level meter
47kΩ
47kΩ (1-249-437-11)

Fig. 5-3-23.

Adjusting method:

1) Set data: 01 to page: 0, address: 01.
2) Connect the audio level meter to the AUDIO OUT L terminal of the IR receiver jig.
3) Change the data of page: F, address: 75, and set the audio signal level to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Connect the audio level meter to the AUDIO OUT R terminal of the IR receiver jig.
6) Check that the audio level is within the specified value. If outside, repeat from step 2.
7) Set data: 00 to page: 0, address: 01.

3-6. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input for VIDEO terminal.
- The items to be adjusted for the R channel will be indicated within the [ ], in regard to the adjusting items to be adjusted for both L and R channels.
- Set the Hi-Fi sound switch in the menu display to "STEREO" position unless specified otherwise.

Note:

1) When inputting the audio signal, input the same signal to both the L and R channels, unless specified otherwise.
2) Be sure to insert the plug (Shorting plug or dummy plug, etc) into the AUDIO terminal (Right). If the plug is not inserted, the monaural mode well be set, and correct adjustments can not be carried out.
   [Monaural mode]
   During recording .... REC AFM RF 1.7MHz carriear will not be output.
   During playback .... The L+R signal will be output from the AUDIO terminal (Left).

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 5-3-23, and perform adjustments at the power switch [VTR] or [PLAYER] position.

[Adjustment Procedure]

1) 1.5 MHz deviation adjustment
2) 1.7 MHz deviation adjustment
3) BPF adjustment

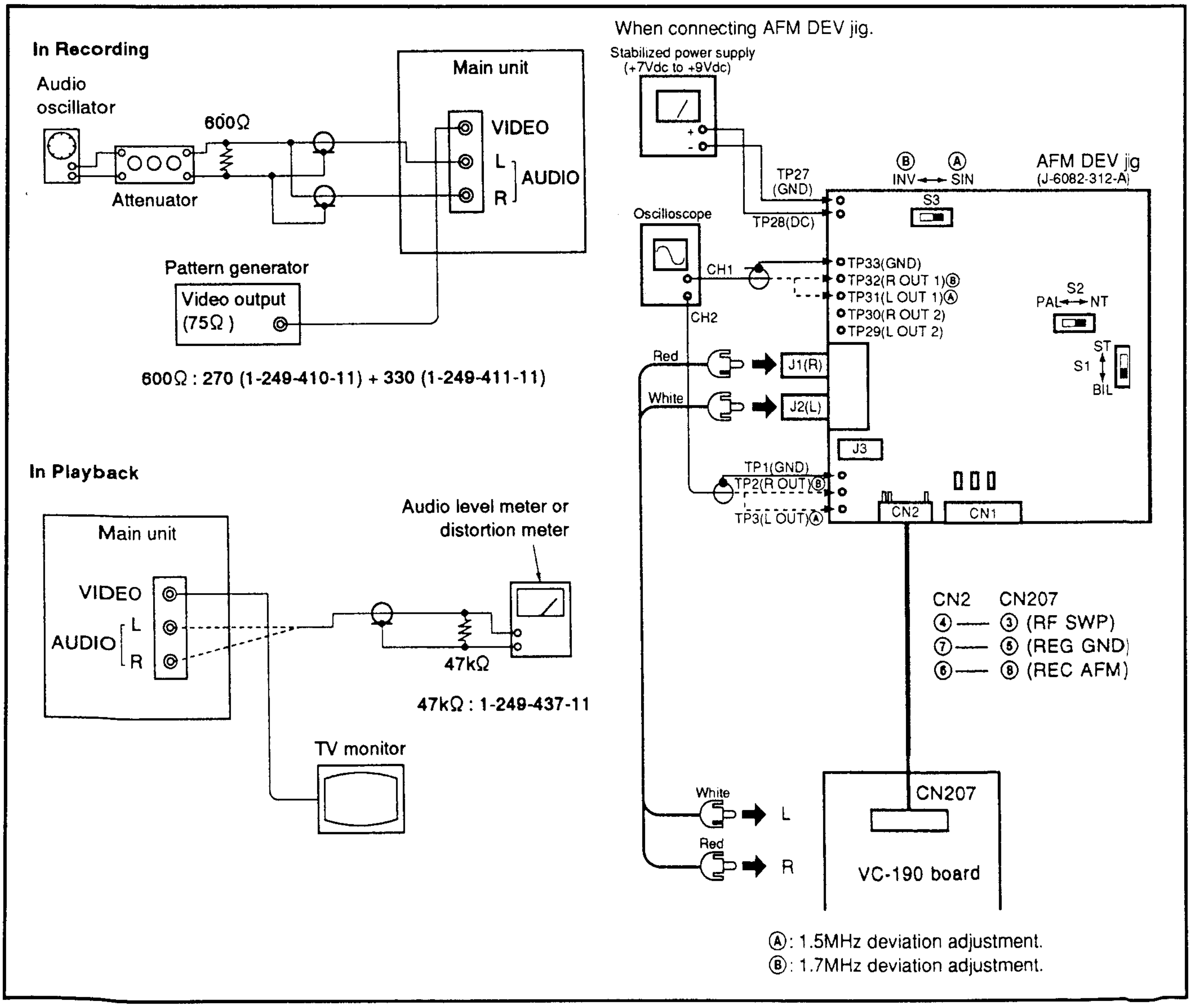

In Recording
Audio oscillator
600Ω
Attenuator
Main unit
VIDEO
L
R
AUDIO
Pattern generator
Video output (75Ω)
600Ω : 270 (1-249-410-11) + 330 (1-249-411-11)
In Playback
Main unit
VIDEO
AUDIO L R
Audio level meter or distortion meter
47kΩ
47kΩ : 1-249-437-11
TV monitor
When connecting AFM DEV jig.
Stabilized power supply (+7Vdc to +9Vdc)
+
-
TP27 (GND)
TP28(DC)
Ⓑ Ⓐ
INV ↔ SIN
S3
AFM DEV jig (J-6082-312-A)
Oscilloscope
CH1
CH2
TP33(GND)
TP32(R OUT 1)Ⓑ
TP31(L OUT 1)Ⓐ
TP30(R OUT 2)
TP29(L OUT 2)
S2
PAL ↔ NT
S1
ST
BIL
Red
White
J1(R)
J2(L)
J3
TP1(GND)
TP2(R OUT)Ⓑ
TP3(L OUT)Ⓐ
CN2
CN1
CN2 CN207
④— ③ (RF SWP)
⑦— ⑥ (REG GND)
⑥— ⑧ (REC AFM)
White
L
Red
R
CN207
VC-190 board
Ⓐ: 1.5MHz deviation adjustment.
Ⓑ: 1.7MHz deviation adjustment.

Fig. 5-3-24.

1. 1.5 MHz Deviation Adjustment (VC-190 board)

Sets the spectrum of the L-ch (L+R/2 signal) level modulated during recording. If deviated, the crosstalk of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	VTR recording
Signal	Input the AFM DEV jig output signal to the right and left audio input terminals (Note 1)
Measuring point	CH1: AFM DEV jig TP31 CH2: AFM DEV jig TP3
Measuring device	Oscilloscope ADD mode CH2 INV mode
Adjustment page	F
Adjustment address	52
Specified value	The difference between CH1 signal and CH2 signal should be minimum.

Connection:

1) Connect CN2 of the AFM DEV jig to CN207 of the VC-190 board.
2) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to AUDIO terminal of the unit.
3) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7 Vdc to +9 Vdc).
4) Set the AFM DEV jig switches to the following positions.
   S1 .... BIL position
   S2 .... NT position (NTSC)
   PAL position (PAL)
   S3 .... SIN position

Note : NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjustment method:

1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
2) Set the oscilloscope to the ADD mode and CH2 to the INV (inverse) mode.
3) Set data: 01 to page: 0, address: 01.
4) Change the data of page: F, address: 52 and minimize the audio signal level difference (A).
5) Press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

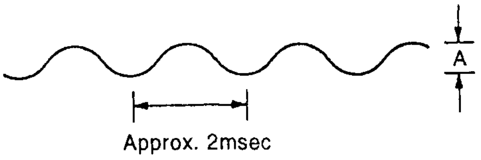


Fig. 5-3-25.

2. 1.7 MHz Deviation Adjustment (VC-190 board)

Sets the spectrum of the R-ch (L–R/2 signal) level modulated during recording. If deviated, the crosstalk of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	VTR recording
Signal	Input the AFM DEV jig output signal to the right and left audio input terminals
Measuring point	CH1: AFM DEV jig TP32 CH2: AFM DEV jig TP2
Measuring device	Oscilloscope ADD mode CH2 INV mode
Adjustment page	F
Adjustment address	53
Specified value	The difference between CH1 signal and CH2 signal should be minimum.

Connection:

1) Connect CN2 of the AFM DEV jig to CN207 of the VC-190 board.
2) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to AUDIO terminal of the unit.
3) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7 to +9 Vdc).
4) Set the AFM DEV jig switches to the following positions.
   S1 .... BIL position
   S2 .... NT position (NTSC)
   PAL position (PAL)
   S3 .... INV position

Note : NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjustment method:

1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
2) Set the oscilloscope to the ADD mode and CH2 to the INV (inverse) mode.
3) Set data: 01 to page: 0, address: 01.
4) Change the data of page: F, address: 53 and minimize the audio signal level difference (A).
5) Press the PAUSE button of the adjusting remote commander.
6) Set data: 00 to page: 0, address: 01.

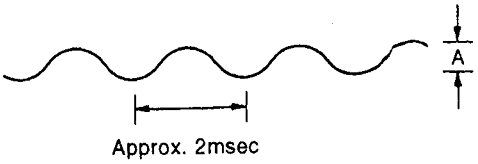


Fig. 5-3-26.

3. BPF f_0 Adjustment (VC-190 board)

Sets the BPF passing frequency so that the AFM signal can separate from the playback RF signal properly. If deviated. the mono/stereo mode will be differentiated incorrectly, and noises and distortions will increase during high volume playback.

Mode	Playback
Signal Measuring point	Alignment tape: For BPF adjustment (WR5-11NS (NTSC)) (WR5-11CS (PAL))
Measuring device	Right or left audio output terminal
Adjustment page	Distortion meter
Adjustment address	F
	54
Specified value	The Main and Sub channel distortion rates should be almost the same (within ± 1%) and minimum

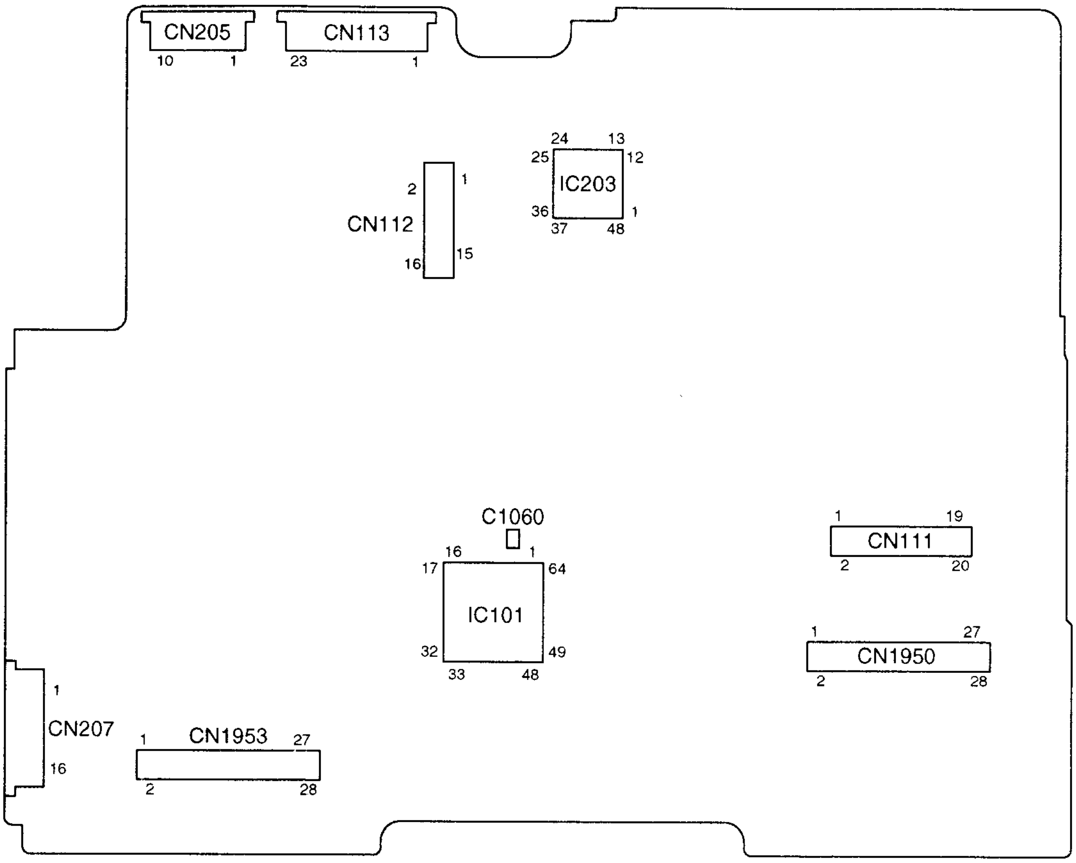
Note : NTSC model : CCD-TR930
PAL model : CCD-TR820E/TR825E/TR920E

Adjustment method:

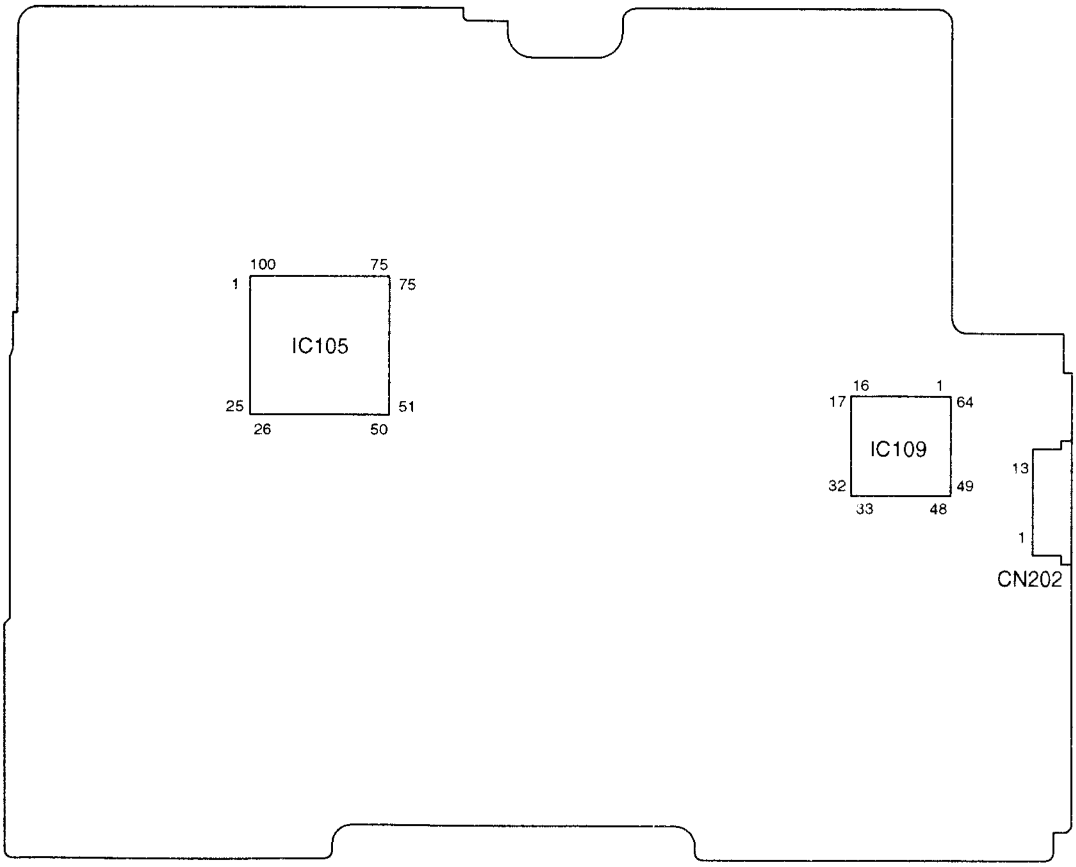
1) Set data: 01 to page: 0, address: 01.
2) Set the Hi-Fi sound switch (menu display) to " $\boxed{2}$ ".
3) Change the data of page: F, address: 54 and minimize the distortion rate.
4) Press the PAUSE button of the adjusting remote commander.
5) Set the Hi-Fi sound switch to " $\boxed{1}$ ".
6) Change the data of page: F, address: 54 and minimize the distortion rate.
7) Press the PAUSE button of the adjusting remote commander.
8) Repeat steps 2) to 7) and set the data of address: 54 so that the distortions rates when the Hi-Fi sound switch is set to " $\boxed{2}$ " and set to " $\boxed{1}$ " respectively are almost the same and minimum.
9) Press the PAUSE button of the adjusting remote commander.
10) Set data: 00 to page: 0, address: 01.
11) Set the Hi-Fi sound switch to "STEREO".

3-7. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

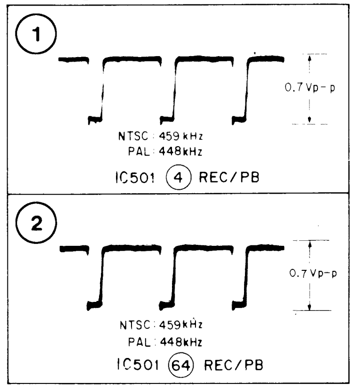
VC-190 BOARD (SIDE A)


CN205
10
1
CN113
23
1
24
13
25
12
IC203
36
1
37
48
2
1
CN112
16
15
C1060
16
1
17
64
IC101
32
49
33
48
1
19
CN111
2
20
1
27
CN1950
2
28
1
CN207
16
1
CN1953
27
2
28

VC-190 BOARD (SIDE B)


100
75
1
75
IC105
25
51
26
50
16
1
17
64
IC109
32
49
33
48
13
1
CN202

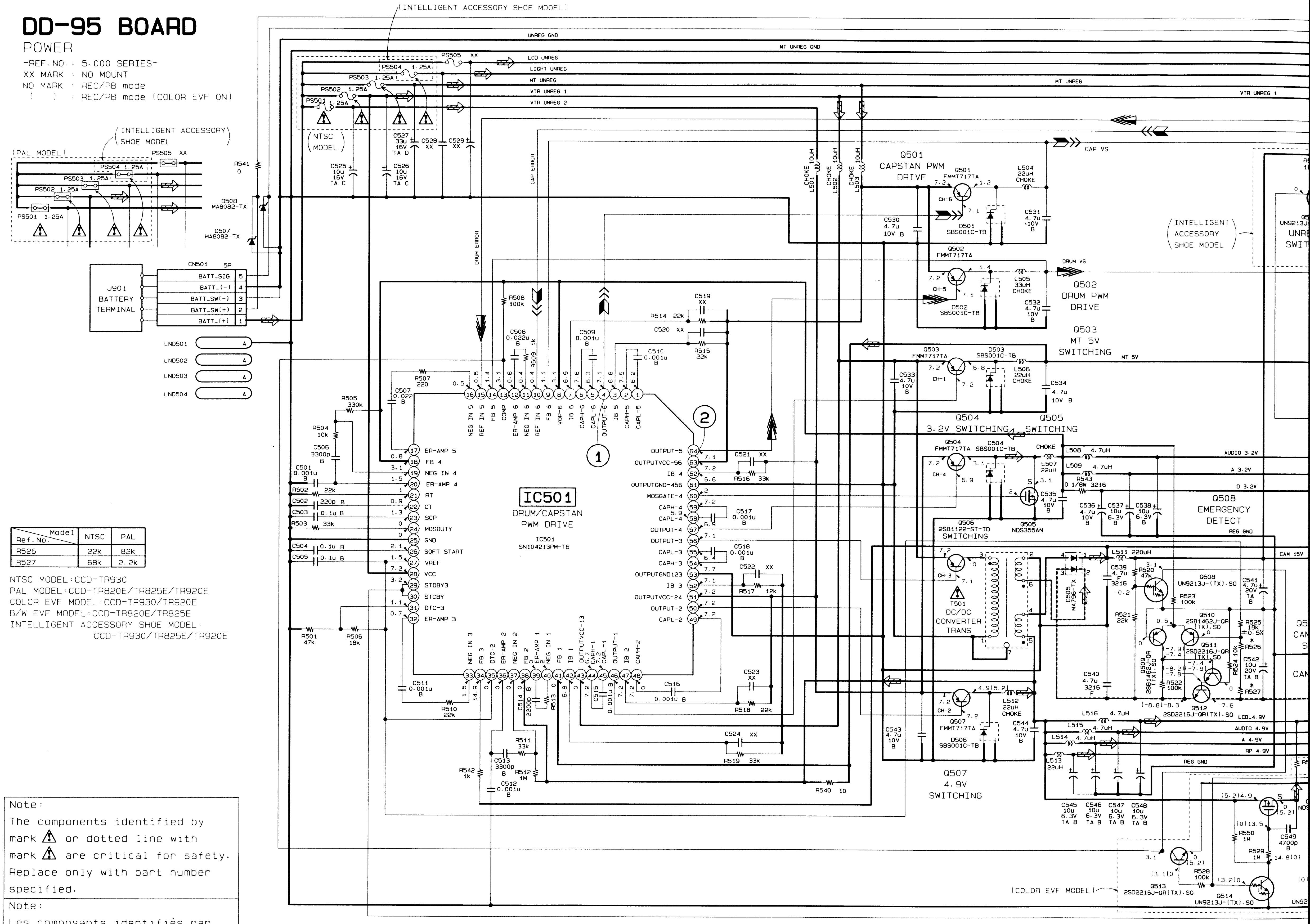
DD-95 BOARD



DD-95 BOARD

POWER

-REF. NO.: 5,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
( ) : REC/PB mode (COLOR EVF ON)


(INTELLIGENT ACCESSORY SHOE MODEL)
UNREG GND
MT UNREG GND
LCD UNREG
LIGHT UNREG
MT UNREG
VTR UNREG 1
VTR UNREG 2
PS505 XX
PS504 1.25A
PS503 1.25A
PS502 1.25A
PS501 1.25A
(NTSC MODEL)
(PAL MODEL)
(INTELLIGENT ACCESSORY SHOE MODEL)
J901 BATTERY TERMINAL
CN501 5P
BATT_SIG
BATT_(-)
BATT_SW(-)
BATT_SW(+)
BATT_(+)
LND501
LND502
LND503
LND504
D508 MA8082-TX
D507 MA8082-TX
R541 0
CAP ERROR
DRUM ERROR
IC501 DRUM/CAPSTAN PWM DRIVE
IC501 SN104213PM-T6
Q501 CAPSTAN PWM DRIVE
Q502 DRUM PWM DRIVE
Q503 MT 5V SWITCHING
Q504 3.2V SWITCHING
Q505 SWITCHING
Q506 2SB1122-ST-TD SWITCHING
Q507 4.9V SWITCHING
Q508 EMERGENCY DETECT
T501 DC/DC CONVERTER TRANS
CAP VS
DRUM VS
MT 5V
AUDIO 3.2V
A 3.2V
D 3.2V
REG GND
CAM 15V
LCD 4.9V
AUDIO 4.9V
A 4.9V
RP 4.9V
(INTELLIGENT ACCESSORY SHOE MODEL)
(COLOR EVF MODEL)
Q513 EVF SWITCH
Q514 EVF SWITCH

Ref.No. \ Model	NTSC	PAL
R526	22k	82k
R527	68k	2.2k

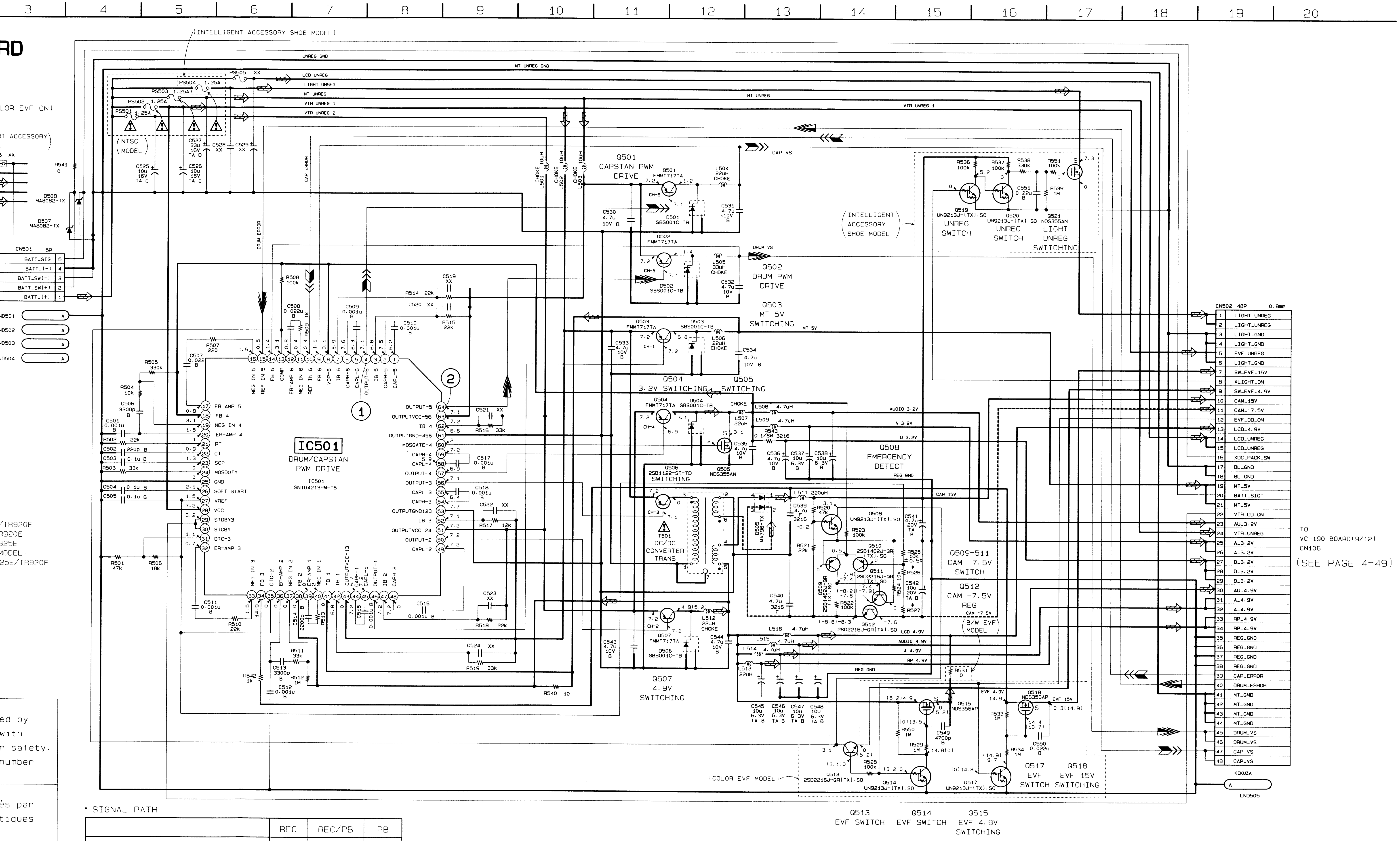
NTSC MODEL:CCD-TR930
PAL MODEL:CCD-TR820E/TR825E/TR920E
COLOR EVF MODEL:CCD-TR930/TR920E
B/W EVF MODEL:CCD-TR820E/TR825E
INTELLIGENT ACCESSORY SHOE MODEL: CCD-TR930/TR825E/TR920E

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

• SIGNAL PATH

	REC	REC/PB	PB
Drum servo(speed and phase)		➡	
Capstan servo(speed and phase)		➡»	


3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
RD
(INTELLIGENT ACCESSORY SHOE MODEL)
UNREG GND
MT UNREG GND
LCD UNREG
LIGHT UNREG
MT UNREG
VTR UNREG 1
VTR UNREG 2
PS505 XX
PS504 1.25A
PS503 1.25A
PS502 1.25A
PS501 1.25A
(NTSC MODEL)
LOR EVF ON)
T ACCESSORY)
R541 0
D508 MA8082-TX
D507 MA8082-TX
CN501 5P
BATT_SIG
BATT_(-)
BATT_SW(-)
BATT_SW(+)
BATT_(+)
ND501
ND502
ND503
ND504
/TR920E
R920E
325E
MODEL
25E/TR920E
C525 10u 16V TA C
C526 10u 16V TA C
C527 33u 16V TA D
C528 XX
C529 XX
CAP ERROR
DRUM ERROR
CHOKE L501 10uH
CHOKE L502 10uH
CHOKE L503 10uH
Q501 CAPSTAN PWM DRIVE
Q501 FMMT717TA
L504 22uH CHOKE
D501 SBS001C-TB
C530 4.7u 10V B
C531 4.7u 10V B
CAP VS
Q502 FMMT717TA
D502 SBS001C-TB
L505 33uH CHOKE
C532 4.7u 10V B
DRUM VS
Q502 DRUM PWM DRIVE
Q503 MT 5V SWITCHING
MT 5V
Q503 FMMT717TA
D503 SBS001C-TB
L506 22uH CHOKE
C533 4.7u 10V B
C534 4.7u 10V B
Q504 3.2V SWITCHING
Q505 SWITCHING
Q504 FMMT717TA
D504 SBS001C-TB
L508 4.7uH
L507 22uH
L509 4.7uH
R543 0 1/8W 3216
AUDIO 3.2V
A 3.2V
D 3.2V
C535 4.7u 10V B
C536 4.7u 10V B
C537 10u 6.3V B
C538 10u 6.3V B
Q506 2SB1122-ST-TD SWITCHING
Q505 NDS355AN
Q508 EMERGENCY DETECT
REG GND
CAM 15V
T501 DC/DC CONVERTER TRANS
D505 MA796-TX
L511 220uH
C539 4.7u 3216
R520 47k
Q508 UN9213J-(TX).SO
R523 100k
C541 4.7u 20V TA
R521 22k
Q510 2SB1462J-QR(TX).SO
R525 18k ±0.5%
R526
Q509 2SB1462J-QR(TX).SO
Q511 2SD2216J-QR(TX).SO
R524 10k
C542 10u 20V TA B
C540 4.7u 3216 F
R522 100k
R527
Q512 2SD2216J-QR(TX).SO
Q509-511 CAM -7.5V SWITCH
Q512 CAM -7.5V REG
CAM -7.5V
(B/W EVF MODEL)
Q507 FMMT717TA
D506 SBS001C-TB
L512 22uH CHOKE
C543 4.7u 10V B
C544 4.7u 10V B
L516 4.7uH
L515 4.7uH
L514 4.7uH
L513 22uH
LCD 4.9V
AUDIO 4.9V
A 4.9V
RP 4.9V
REG GND
Q507 4.9V SWITCHING
C545 10u 6.3V TA B
C546 10u 6.3V TA B
C547 10u 6.3V TA B
C548 10u 6.3V TA B
R531 0
EVF 4.9V
Q518 NDS356AP
EVF 15V
Q515 NDS356AP
R533 1M
R550 1M
C549 4700p B
R529 1M
R534 1M
C550 0.022u B
R528 100k
Q513 2SD2216J-QR(TX).SO
Q514 UN9213J-(TX).SO
Q517 UN9213J-(TX).SO
(COLOR EVF MODEL)
Q517 EVF SWITCH
Q518 EVF 15V SWITCHING
Q513 EVF SWITCH
Q514 EVF SWITCH
Q515 EVF 4.9V SWITCHING
(INTELLIGENT ACCESSORY SHOE MODEL)
R536 100k
R537 100k
R538 330k
R551 100k
C551 0.22u B
R539 1M
Q519 UN9213J-(TX).SO
Q520 UN9213J-(TX).SO
Q521 NDS355AN
Q519 UNREG SWITCH
Q520 UNREG SWITCH
Q521 LIGHT UNREG SWITCHING
IC501
DRUM/CAPSTAN PWM DRIVE
IC501 SN104213PM-T6
R508 100k
C508 0.022u B
R509 1k
C509 0.001u B
C510 0.001u B
C519 XX
R514 22k
C520 XX
R515 22k
R507 220
C507 0.022 B
R505 330k
R504 10k
C506 3300p B
C501 0.001u B
R502 22k
C502 220p B
C503 0.1u B
R503 33k
C504 0.1u B
C505 0.1u B
R501 47k
R506 18k
NEG IN 5
REF IN 5
FB 5
COMP
ER-AMP 6
NEG IN 6
FB 6
VOP-6
IB 6
CAPH-6
CAPL-6
OUTPUT-6
IB 5
CAPH-5
CAPL-5
ER-AMP 5
FB 4
NEG IN 4
ER-AMP 4
RT
CT
SCP
MOSDUTY
GND
SOFT START
VREF
VCC
STOBY3
STCBY
DTC-3
ER-AMP 3
OUTPUT-5
OUTPUTVCC-56
IB 4
OUTPUTGND-456
MOSGATE-4
CAPH-4
CAPL-4
OUTPUT-4
OUTPUT-3
CAPL-3
CAPH-3
OUTPUTGND123
IB 3
OUTPUTVCC-24
OUTPUT-2
CAPL-2
NEG IN 3
FB 3
DTC-2
ER-AMP 2
NEG IN 2
FB 2
ER-AMP 1
NEG IN 1
FB 1
IB 1
OUTPUTVCC-13
CAPH-1
CAPL-1
OUTPUT-1
IB 2
CAPH-2
①
②
C521 XX
R516 33k
C517 0.001u B
C518 0.001u B
C522 XX
R517 12k
C523 XX
C516 0.001u B
R518 22k
C524 XX
R519 33k
C511 0.001u B
R510 22k
C514 2200p B
R513 0
C515 0.001u B
R511 33k
C513 3300p B
R512 1M
C512 0.001u B
R542 1k
R540 10
CN502 48P 0.8mm
LIGHT_UNREG
LIGHT_UNREG
LIGHT_GND
LIGHT_GND
EVF_UNREG
LIGHT_GND
SW_EVF_15V
XLIGHT_ON
SW_EVF_4.9V
CAM_15V
CAM_-7.5V
EVF_DD_ON
LCD_4.9V
LCD_UNREG
LCD_UNREG
XDC_PACK_SW
BL_GND
BL_GND
MT_5V
BATT_SIG
MT_5V
VTR_DD_ON
AU_3.2V
VTR_UNREG
A_3.2V
A_3.2V
D_3.2V
D_3.2V
D_3.2V
AU_4.9V
A_4.9V
A_4.9V
RP_4.9V
RP_4.9V
REG_GND
REG_GND
REG_GND
REG_GND
CAP_ERROR
DRUM_ERROR
MT_GND
MT_GND
MT_GND
MT_GND
DRUM_VS
DRUM_VS
CAP_VS
CAP_VS
KIKUZA
LND505
TO VC-190 BOARD(9/12) CN106
(SEE PAGE 4-49)

ed by
with
r safety.
number

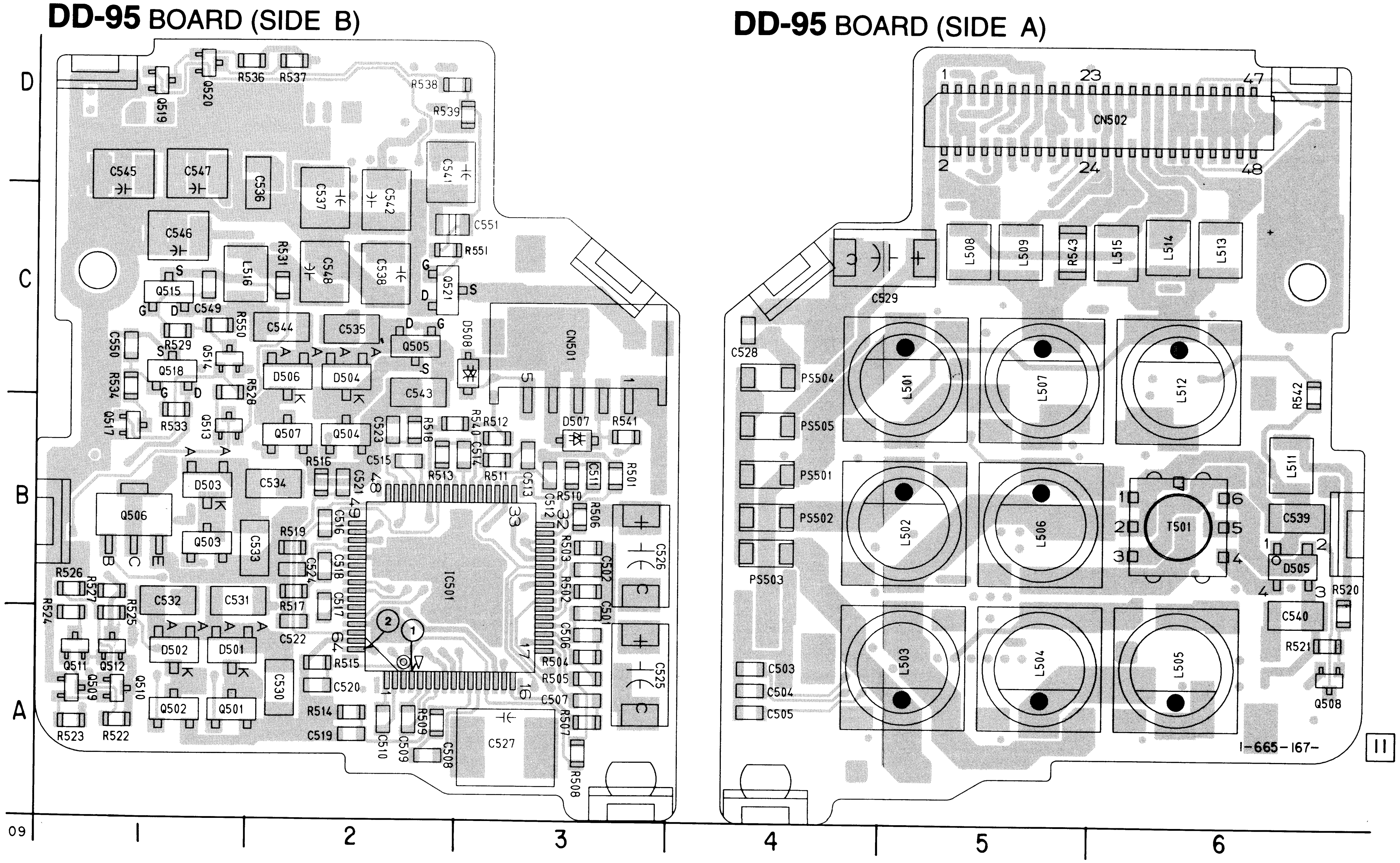
és par
tiques
r une
spécifié.

• SIGNAL PATH

	REC	REC/PB	PB
Drum servo(speed and phase)		⇛	
Capstan servo(speed and phase)		⇒»	

DD-95 (POWER) PRINTED WIRING BOARD

– Ref No. DD-95 BOARD: 5,000 series –


DD-95 BOARD (SIDE B)

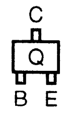
DD-95 BOARD (SIDE A)

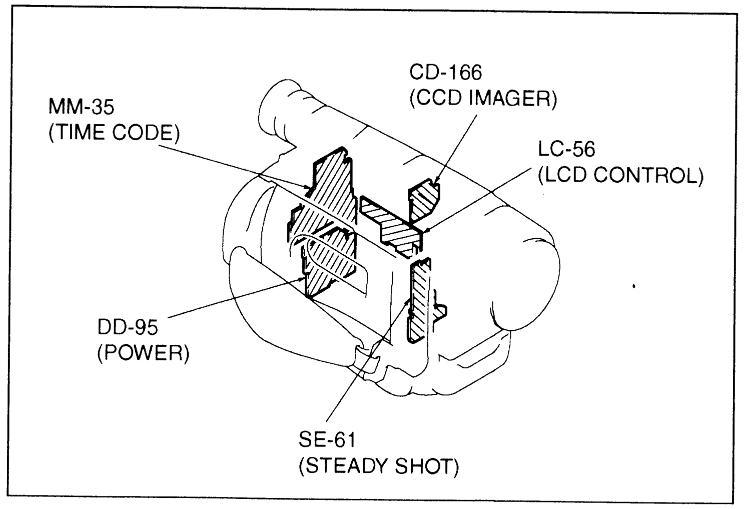
D
C
B
A
09
1
2
3
4
5
6
Q519
Q520
R536
R537
R538
R539
C545
C547
C536
C537
C542
C541
C546
C551
R551
R531
C548
C538
L516
Q521
Q515
C549
C550
R529
Q514
R550
C544
C535
Q505
D508
CN501
R534
Q518
R528
D506
D504
C543
Q517
R533
Q513
Q507
Q504
C523
R518
R540
C514
R512
D507
R541
R516
C515
R513
R511
C513
R510
R501
D503
C534
C521
C512
R506
Q506
Q503
C533
R519
C516
C524
C518
IC501
R503
R502
C502
C526
C501
R526
R527
R525
R524
C532
C531
R517
C517
C522
C506
D502
D501
R515
R504
Q511
Q512
Q509
Q510
C530
C520
R505
C507
C525
Q502
Q501
R514
C519
C510
C509
R509
C508
C527
R507
R508
R523
R522
1
2
CN502
1
23
47
2
24
48
L508
L509
R543
L515
L514
L513
C529
C528
PS504
PS505
PS501
PS502
PS503
L501
L507
L512
R542
L511
L502
L506
T501
C539
D505
R520
C540
R521
Q508
C503
C504
C505
L503
L504
L505
1-665-167-
11

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor




CD-166
(CCD IMAGER)
MM-35
(TIME CODE)
LC-56
(LCD CONTROL)
DD-95
(POWER)
SE-61
(STEADY SHOT)

DD-95 BOARD

C501	A-3
C502	B-3
C503	A-4
C504	A-4
C505	A-4
C506	A-3
C507	A-3
C508	A-2
C509	A-2
C510	A-2
C511	B-3
C512	B-3
C513	B-3
C514	B-3
C515	B-2
C516	B-2
C517	B-2
C518	B-2
C519	A-2
C520	A-2
C521	B-2
C522	A-2
C523	B-2
C524	B-2
C525	A-3
C526	B-3
C527	A-3
C528	C-4
C529	C-4
C530	A-2
C531	B-1
C532	B-1
C533	B-2
C534	B-2
C535	C-2
C536	C-2
C537	C-2
C538	C-2
C539	B-6
C540	B-6
C541	D-2
C542	C-2
C543	C-2
C544	C-2
C545	D-1
C546	C-1
C547	D-1
C548	C-2
C549	C-1
C550	C-1
C551	C-2
CN501	C-3
CN502	D-6
D501	A-1
D502	A-1
D503	B-1
D504	C-2
D505	B-6
D506	C-2
D507	B-3
D508	C-3
IC501	A-2
L501	C-5
L502	B-5
L503	A-5
L504	A-5
L505	A-6
L506	B-5
L507	C-5
L508	C-5
L509	C-5
L511	B-6
L512	C-6
L513	C-6
L514	C-6
L515	C-6
L516	C-1
PS501	B-4
PS502	B-4
PS503	B-4
PS504	C-4
PS505	B-4
Q501	A-1
Q502	A-1
Q503	B-1
Q504	B-2
Q505	C-2
Q506	B-1
Q507	B-2
Q508	A-6
Q509	A-1
Q510	A-1
Q511	A-1
Q512	A-1
Q513	B-1
Q514	C-1
Q515	C-1
Q517	B-1
Q518	C-1
Q519	D-1
Q520	D-1
Q521	C-2
R501	B-3
R502	B-3
R503	B-3
R504	A-3
R505	A-3
R506	B-3
R507	A-3
R508	A-3
R509	A-2
R510	B-3
R511	B-3
R512	B-3
R513	B-2
R514	A-2
R515	A-2
R516	B-2
R517	B-2
R518	B-2
R519	B-2
R520	B-6
R521	A-6
R522	A-1
R523	A-1
R524	A-1
R525	A-1
R526	B-1
R527	B-1
R528	C-1
R529	C-1
R531	C-2
R533	B-1
R534	C-1
R536	D-1
R537	D-2
R538	D-2
R539	D-2
R540	B-2
R541	B-3
R542	C-6
R543	C-5
R550	C-1
R551	C-2
T501	B-6

SECTION 6
REPAIR PARTS LIST

6-1. EXPLODED VIEWS

NOTE:

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

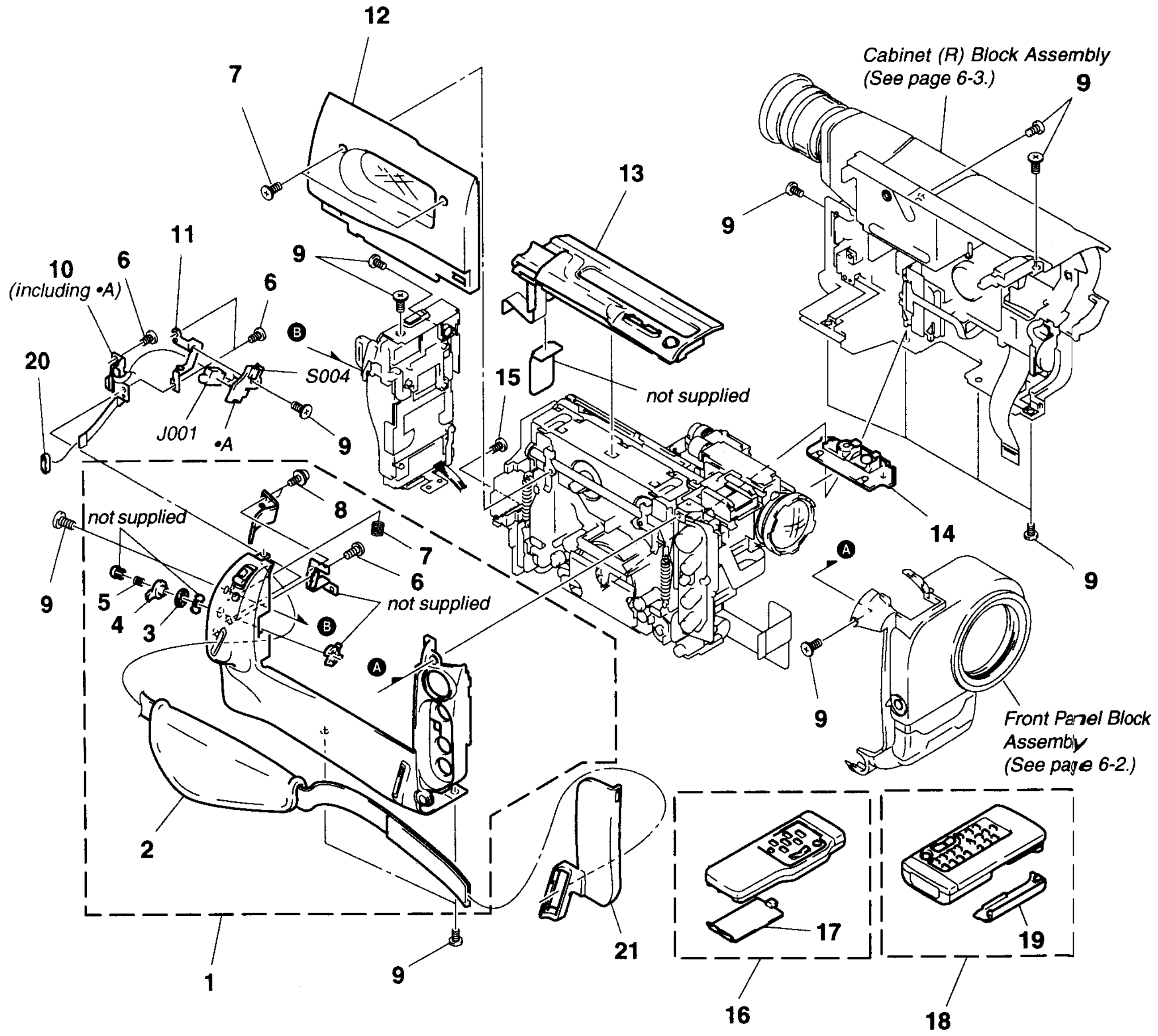
- Abbreviation

AUS : Australian model
CND : Canadian model
EE : East European model
JE : Tourist model
NE : North European model
RU : Russian model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

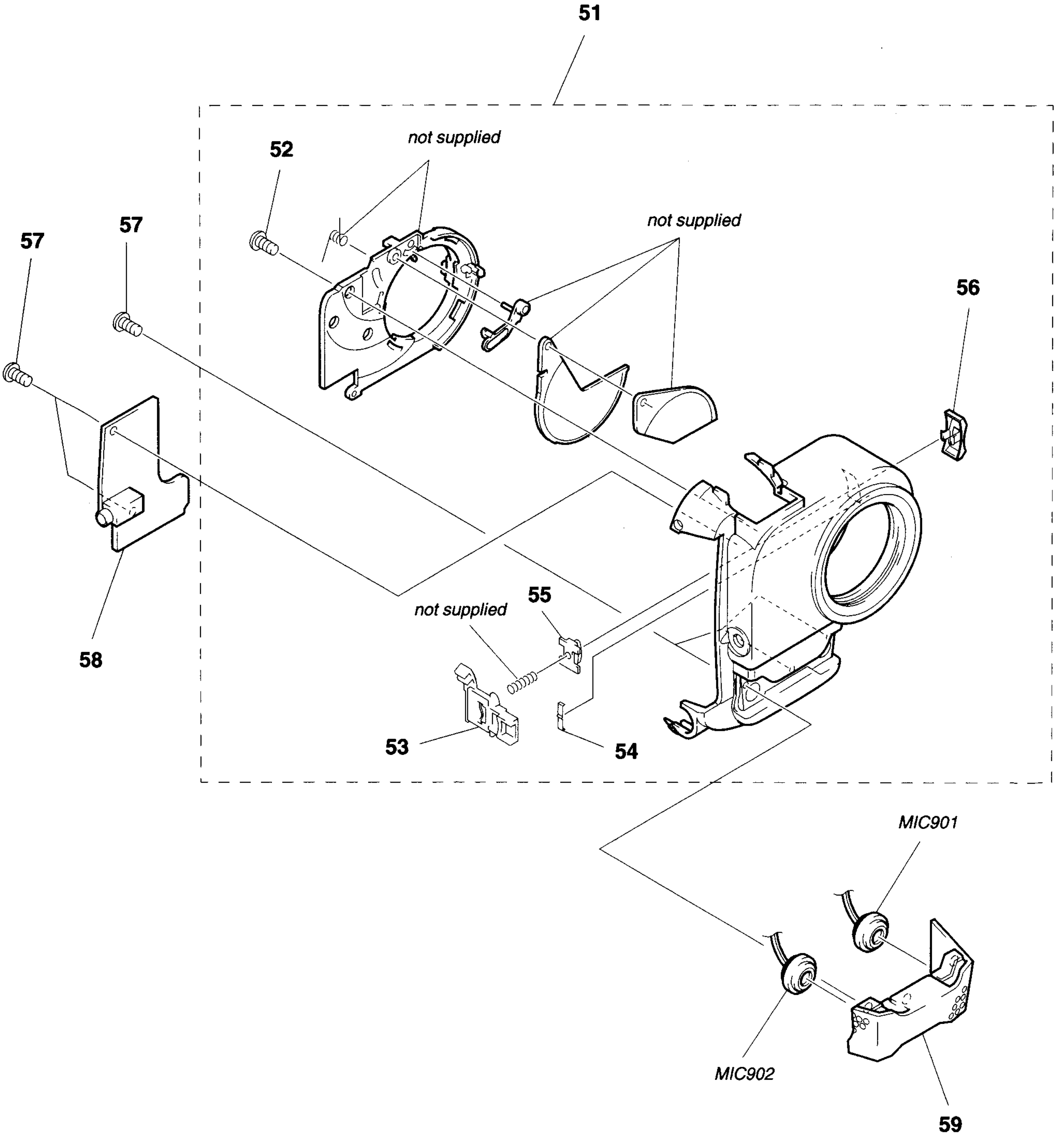
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

6-1-1. CABINET (L) BLOCK ASSEMBLY


12
7
Cabinet (R) Block Assembly
(See page 6-3.)
9
13
9
11
10
(including •A)
6
9
6
B
20
S004
15
not supplied
J001
•A
9
not supplied
8
7
6
not supplied
B
A
14
9
9
5
4
3
A
9
Front Panel Block Assembly
(See page 6-2.)
2
17
19
21
1
9
16
18

Ref. No.	Part No.	Description	Remark
1	X-3947-247-1	CABINET (L) ASSY (TR920E/TR930)	
1	X-3947-434-1	CABINET (L) ASSY (TR820E/TR825E)	
2	3-969-339-31	BELT, GRIP	
3	3-970-854-01	SPRING, STAND-BY	
4	3-969-081-01	KNOB, STAND-BY	
5	3-972-501-01	SPRING, COMPRESSION	
6	3-948-339-61	TAPPING	
7	3-302-492-00	SPRING, COMPRESSION	
8	3-679-362-11	SCREW	
9	3-968-729-01	SCREW (M2), LOCK ACE, P2	
10	1-475-098-21	SWITCH BLOCK, CONTROL (SS-8100)	
* 11	3-975-532-01	HOLDER, EL	
12	X-3947-199-1	LID ASSY, CASSETTE	
13	1-475-099-71	SWITCH BLOCK, VTR CONTROL (FK)(TR930)	
13	1-475-099-91	SWITCH BLOCK, VTR CONTROL (FK) (TR820E/TR825E)	
13	1-475-099-81	SWITCH BLOCK, VTR CONTROL (FK)(TR920E)	
14	3-975-516-01	SCREW, TRIPOD	
15	3-713-786-21	SCREW (M2X3)	
16	1-467-574-21	REMOTE COMMANDER (RMT-708) (TR820E/TR920E/TR930)	
17	3-859-131-01	LID, BATTERY CASE (for RMT-708)	
18	8-917-593-90	REMOTE COMMANDER (RMT-717)(TR825E)	
19	3-742-854-01	LID, BATTERY CASE (for RMT-717)	
20	1-500-227-11	BEAD FERRITE (TR825E)	
21	3-975-522-01	COVER, JACK	
J001	1-565-276-21	JACK, ULTRA SMALL 1P (LANC)	
S004	1-572-467-71	SWITCH, PUSH (1 KEY) (EJECT)	

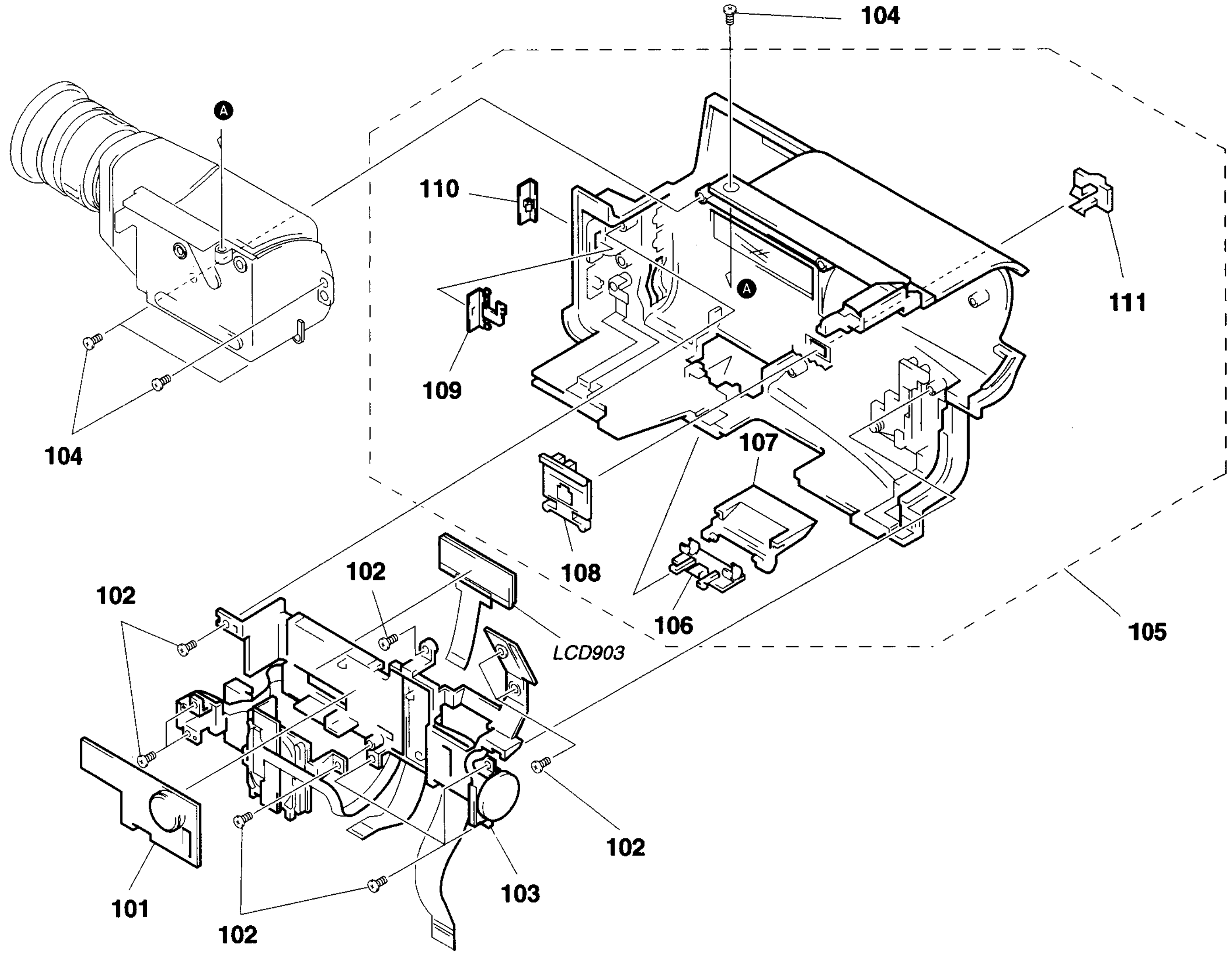
6-1-2. FRONT PANEL BLOCK ASSEMBLY


51
52
not supplied
57
57
not supplied
56
55
not supplied
58
53
54
MIC901
MIC902
59

Ref. No.	Part No.	Description	Remark
51	X-3947-302-1	PANEL ASSY, FRONT (TR930)	
51	X-3947-313-1	PANEL ASSY, FRONT (TR920E)	
51	X-3947-307-1	PANEL ASSY, FRONT (TR820E/TR825E)	
52	3-719-601-01	SCREW (B2X5), TAPPING	
* 53	3-975-941-01	BUTTON, POWER	
54	3-969-270-01	SPRING, CLICK	
55	3-968-740-01	BUTTON, POWER LOCK	
56	3-968-739-01	BUTTON, POWER	

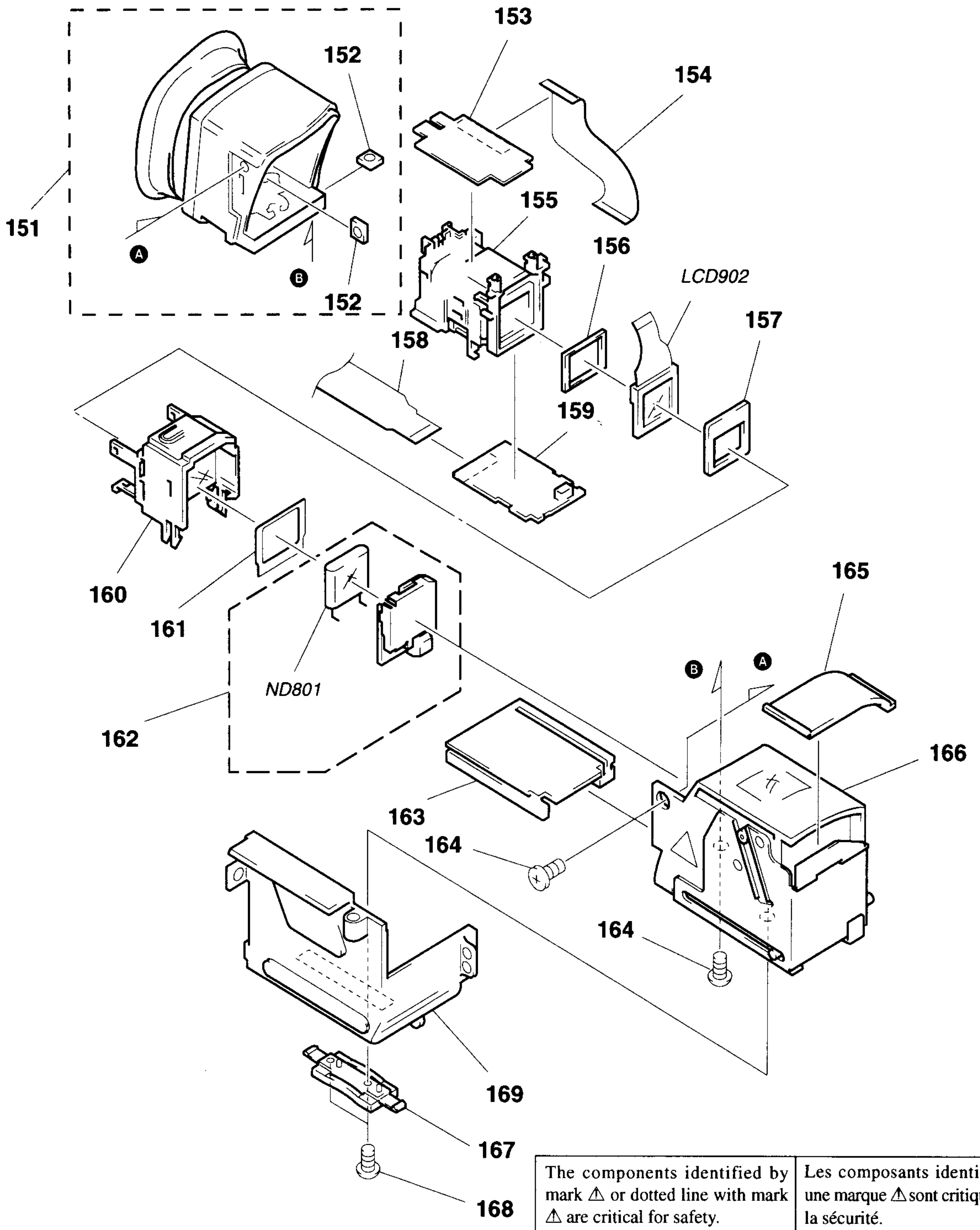
Ref. No.	Part No.	Description	Remark
57	3-948-339-61	TAPPING	
58	A-7073-168-A	MI-29 (HP) BOARD, COMPLETE (TR820E/TR825E/TR920E)	
58	A-7073-172-A	MI-29 (HCI) BOARD, COMPLETE (TR930)	
59	X-3947-296-1	GRILLE ASSY	
MIC901	1-542-312-11	MICROPHONE (L-CH)	
MIC902	1-542-312-11	MICROPHONE (R-CH)	

6-1-3. CABINET (R) BLOCK ASSEMBLY


104
A
110
109
104
A
111
107
108
102
102
106
105
LCD903
102
101
103
102

Ref. No.	Part No.	Description	Remark
101	A-7073-173-A	LC-56 (HCI) BOARD, COMPLETE	
102	3-948-339-61	TAPPING	
103	1-475-160-11	SWITCH BLOCK, CONTROL	
104	3-968-729-01	SCREW (M2), LOCK ACE, P2	
105	X-3947-297-1	CABINET (R) ASSY (TR930)	
105	X-3947-308-1	CABINET (R) ASSY (TR820E)	
105	X-3947-312-1	CABINET (R) ASSY (TR825E)	
105	X-3947-314-1	CABINET (R) ASSY (TR920E)	
* 106	3-975-959-01	SLIDER, LI	
107	3-975-958-01	LID, LI	
* 108	3-975-955-01	SLIDER, ST	
* 109	3-975-962-01	SLIDER, SS	
110	3-975-961-01	KNOB, SS	
111	3-975-954-01	KNOB, ST	
LCD903	1-801-697-11	DISPLAY PANEL, LIQUID CRYSTAL	

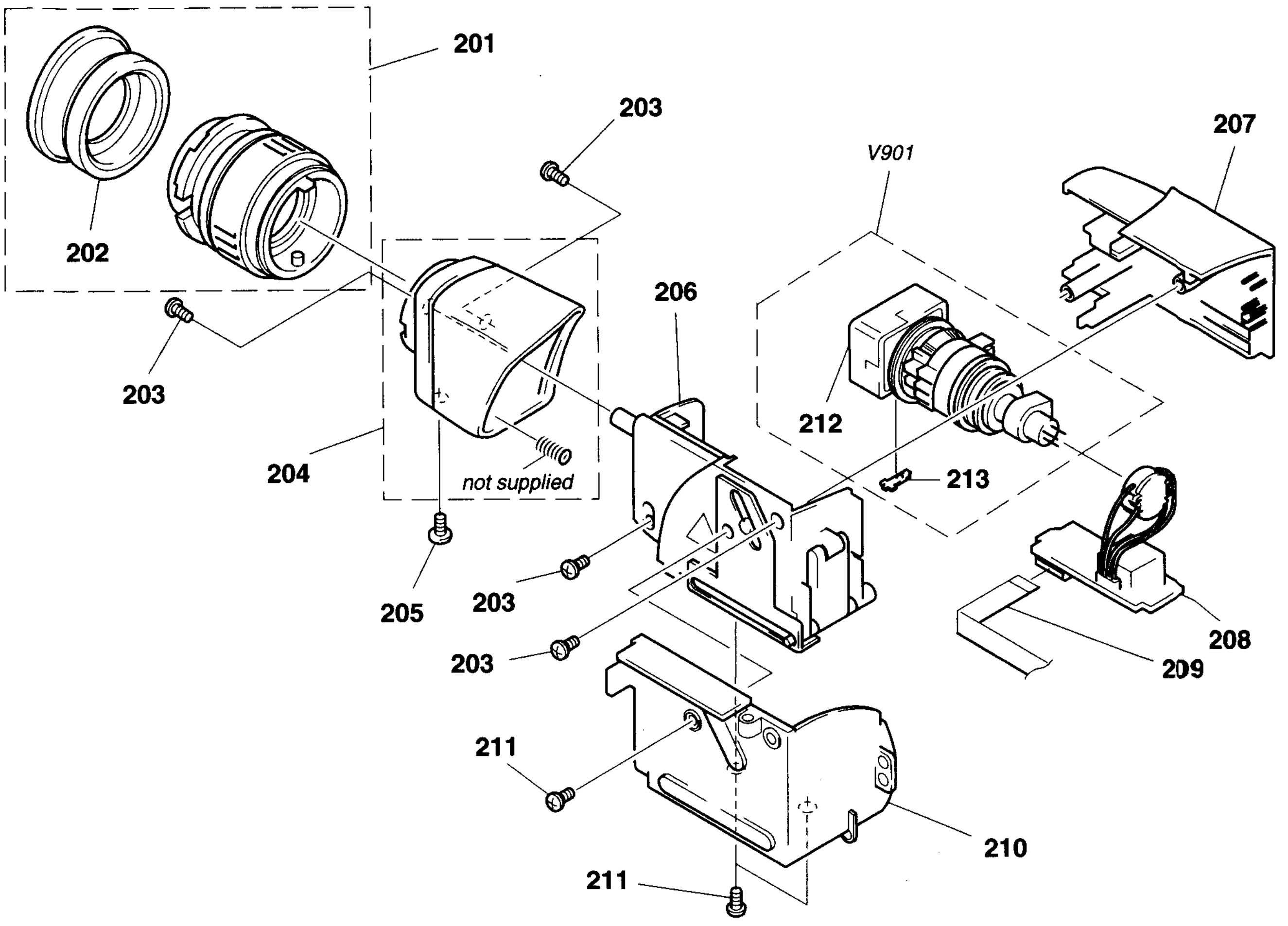
6-1-4. COLOR EVF BLOCK ASSEMBLY (TR920E/TR930)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
151	X-3947-301-1	CABINET (REAR) ASSY, VF	
152	3-718-233-01	NUT, PLATE	
153	A-7073-095-A	VF-112 BOARD, COMPLETE (TR930)	
153	A-7073-120-A	VF-112P BOARD, COMPLETE (TR920E)	
154	1-665-149-11	FP-530 FLEXIBLE BOARD	
155	X-3947-193-1	LENS ASSY, VF	
* 156	3-969-924-01	CUSHION (Y), LCD	
157	3-960-302-11	CUSHION (1), LCD	
158	1-660-301-11	FP-430 FLEXIBLE BOARD (TR930)	
158	1-665-807-11	FP-505 FLEXIBLE BOARD (TR920E)	
159	A-7073-094-A	VF-111 BOARD, COMPLETE (TR930)	
159	A-7073-119-A	VF-111P BOARD, COMPLETE (TR920E)	
160	X-3946-709-2	HOLDER ASSY (BLACK), PRISM	
* 161	3-969-923-01	CUSHION, BACK LIGHT	
162	A-7073-096-A	LB-50 BOARD, COMPLETE	
163	3-975-976-01	CABINET (BOTTOM), VF	
164	3-968-729-61	SCREW (M2X3), LOCK ACE, P2	
165	3-975-975-01	LID, SLIDE	
166	X-3947-300-1	CABINET (FRONT) ASSY, VF	
167	3-975-977-01	SLIDER	
168	3-968-729-11	SCREW (M2), LOCK ACE, P2 (TR930)	
168	3-968-729-41	SCREW (M2), LOCK ACE, P2 (TR920E)	
169	X-3947-299-1	CABINET (S) ASSY, BASE	
LCD902	8-753-016-10	LCX005BK-1/5 COMPLETE	
⚠ND801	1-517-414-21	FLUORESCENT TUB (0.55 INCH)	

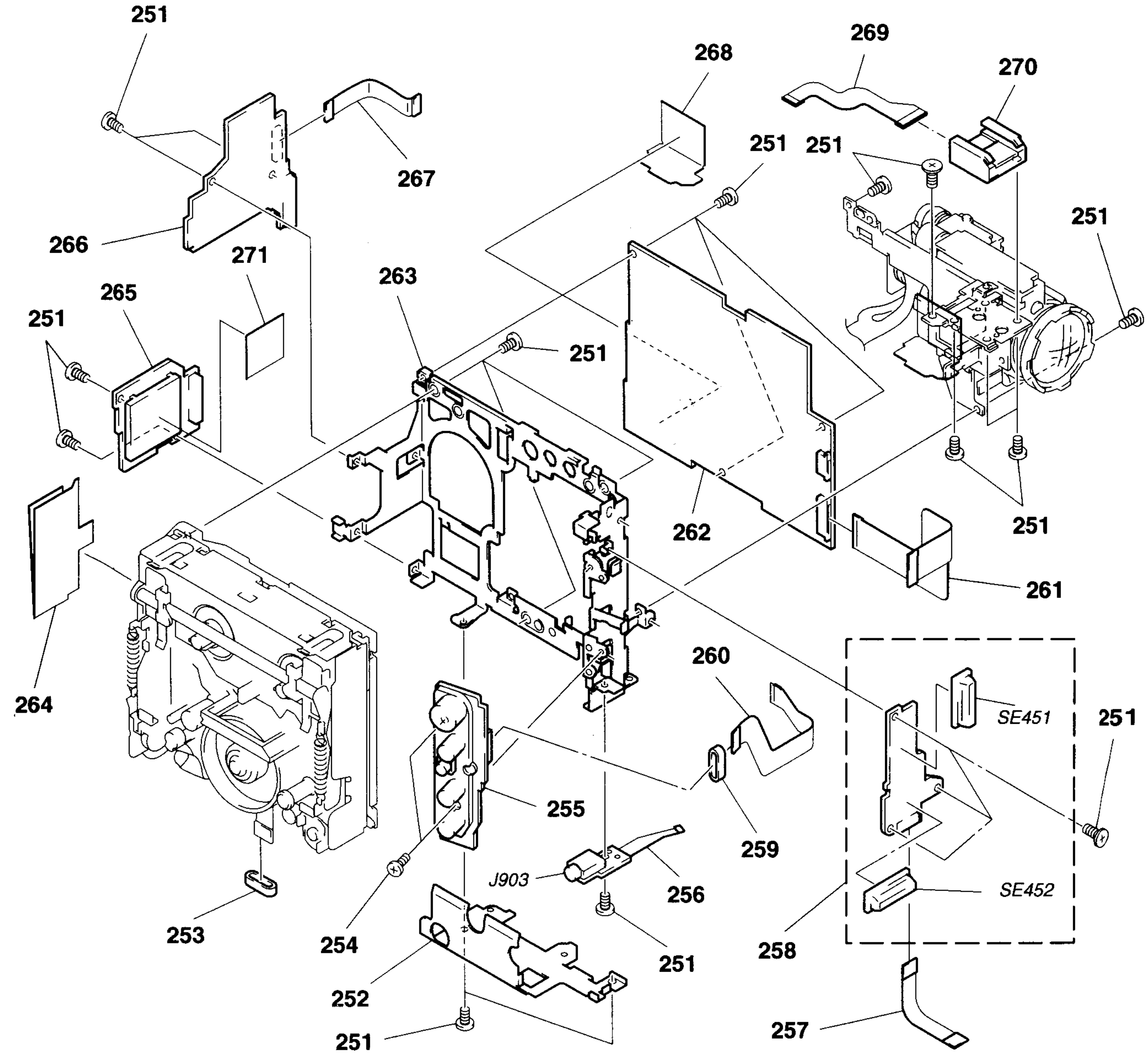
6-1-5. B/W EVF BLOCK ASSEMBLY (TR820E/TR825E)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

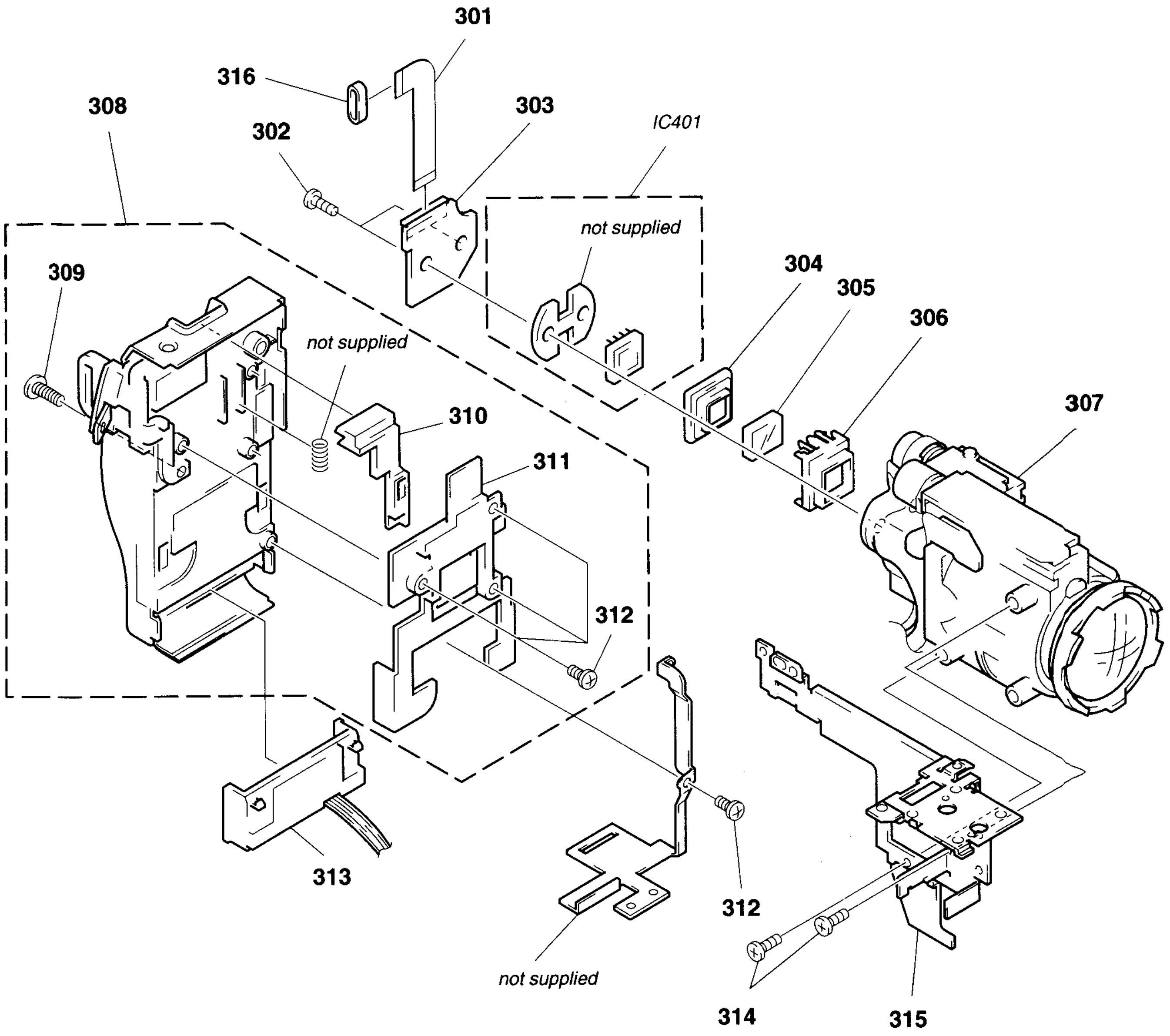
Ref. No.	Part No.	Description	Remark
201	X-3944-966-1	FINDER ASSY	
202	3-963-391-01	EYE CUP	
203	3-948-339-01	SCREW, TAPPING	
204	X-3947-311-1	CABINET (B) ASSY, VF	
205	3-703-454-41	SCREW (1.7X3), TAPPING	
206	X-3947-310-1	CABINET (L) ASSY, VF	
207	3-976-002-01	CABINET (R), VF	
208	A-7056-774-A	VF-99 (HP) BOARD, COMPLETE	
209	1-661-547-11	FP-490 FLEXIBLE BOARD	
210	X-3947-309-1	CABINET (B) ASSY, BASE	
211	3-719-381-01	SCREW (M2X4)	
212	3-977-292-01	MASK, CRT	
213	3-725-130-01	COVER, HIGH VOLTAGE	
⚠V901	1-452-673-31	CRT ASSY (M01KXX90WB)	

6-1-6. MAIN BOARDS ASSEMBLY



Ref. No.	Part No.	Description	Remark
251	3-713-786-21	SCREW (M2X3)	
* 252	3-975-534-01	FRAME (B), MD	
253	1-500-227-11	BEAD, FERRITE (TR820E/TR825E)	
254	3-968-729-01	SCREW (M2), LOCK ACE, P2	
255	A-7073-121-A	PJ-80 (VHCRP) BOARD, COMPLET (TR820E/TR825E)	
255	A-7073-176-A	PJ-80 (HCI) BOARD, COMPLETE (TR930)	
255	A-7073-101-A	PJ-80 (VHCRJ) BOARD, COMPLETE (TR920E)	
256	1-665-148-11	FP-527 FLEXIBLE BOARD	
257	1-660-277-11	FP-377 FLEXIBLE BOARD	
258	A-7073-175-A	SE-61 (HCI) BOARD, COMPLETE	
259	1-500-226-31	BEAD, FERRITE (EXCEPT TR920E:E,JE)	
260	1-665-146-11	FP-516 FLEXIBLE BOARD	
261	1-665-145-11	FP-512 FLEXIBLE BOARD	
262	A-7093-225-A	VC-190 (HDP) BOARD, COMPLETE (TR825E)	
262	A-7093-227-A	VC-190 (HP) BOARD, COMPLETE (TR820E)	
262	A-7093-228-A	VC-190 (HCI) BOARD, COMPLETE (TR930)	
262	A-7093-264-A	VC-190 (HCPE) BOARD, COMPLETE (TR920E)	
263	3-975-515-01	FRAME, MD	
264	3-975-520-01	SHEET, LS FLEXIBLE GUARD	
265	A-7093-226-A	DD-95 (HD) BOARD, COMPLETE (TR825E)	
265	A-7093-265-A	DD-95 (HCPE) BOARD, COMPLETE (TR920E)	
265	A-7093-229-A	DD-95 (HCI) BOARD, COMPLETE (TR930)	
265	A-7093-292-A	DD-95 (HP) BOARD, COMPLETE (TR820E)	
266	A-7073-167-A	MM-35 (HDP) BOARD, COMPLETE (TR825E)	
266	A-7073-174-A	MM-35 (HCI) BOARD, COMPLETE (TR820E/TR920E/TR930)	
267	1-665-142-11	FP-500 FLEXIBLE BOARD	
* 268	3-976-662-01	GUARD, MD FLEXIBLE	
269	1-660-280-11	FP-380 FLEXIBLE BOARD (TR825E)	
269	1-665-681-11	FP-524 FLEXIBLE BOARD (TR920E/TR930)	
270	1-774-867-21	CONNECTOR, EXTERNAL (HOT SHOE) 8P	
271	3-976-739-01	INSULATOR, DD	
J903	1-659-514-21	JACK (SMALL TYPE) 1P (HEADPHONES)	
SE451	1-810-725-71	SENSOR, ANGULAR VELOCITY (YAW)	
SE452	1-810-725-81	SENSOR, ANGULAR VELOCITY (PITCH)	

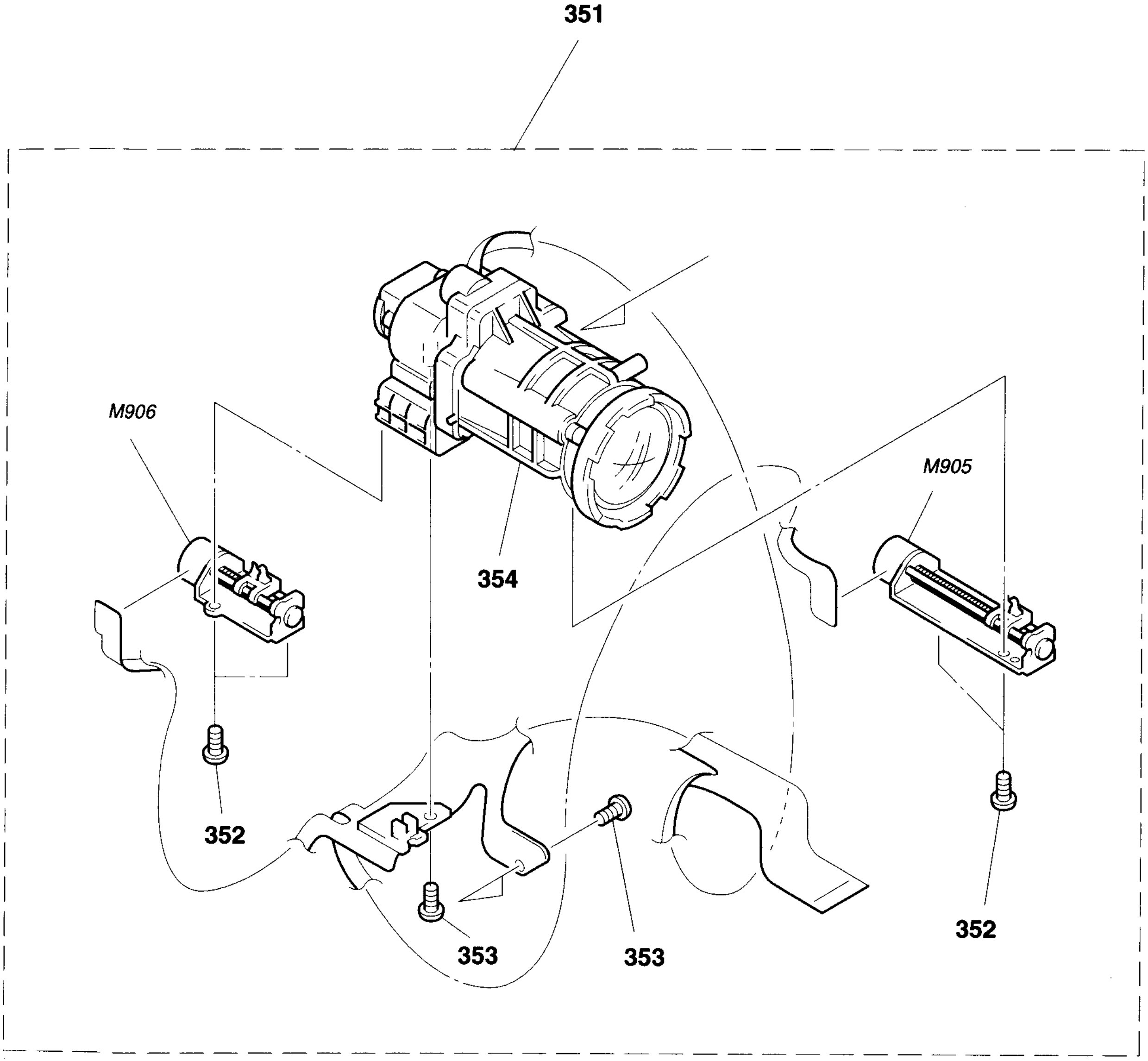
6-1-7. BATTERY PANEL BLOCK ASSEMBLY AND CCD BLOCK ASSEMBLY


301
316
308
302
303
IC401
not supplied
309
304
305
306
not supplied
310
307
311
312
313
312
not supplied
314
315

Be sure to read "Note on the CCD Imager replacement" on page 4–8 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
301	1-660-300-11	FP-426 FLEXIBLE BOARD	
302	3-318-203-11	SCREW (B1.7X6), TAPPING	
303	A-7073-100-A	CD-166 BOARD, COMPLETE	
304	3-961-192-11	RUBBER (FH), SEAL	
305	1-547-787-41	FILTER BLOCK, OPTICAL	
306	3-963-467-11	ADAPTOR (FH), CCD FITTING	
307	8-848-710-01	LENS, ZOOM (VCL-4214VA)	
308	X-3947-298-1	PANEL ASSY, BATTERY	
309	3-968-729-01	SCREW (M2), LOCK ACE, P2	
310	3-975-500-11	KNOB, RELEASE	
* 311	3-975-501-01	COVER, LOCK	
312	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
313	1-694-076-21	TERMINAL BOARD, BATTERY	
314	3-948-339-61	TAPPING	
315	3-975-946-01	FRAME, LENS	
316	1-500-227-11	BEAD, FERRITE (EXCEPT TR920E:EJE)	
IC401	A-7030-615-A	CCD BLOCK ASSY (CCD IMAGER) (079 SERVICE)(TR930)	
IC401	A-7030-782-A	CCD BLOCK ASSY (CCD IMAGER) (211 SERVICE)(TR820E/TR825E/TR920E)	

6-1-8. LENS DEVICE (VCL-4214VA)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M906
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M905
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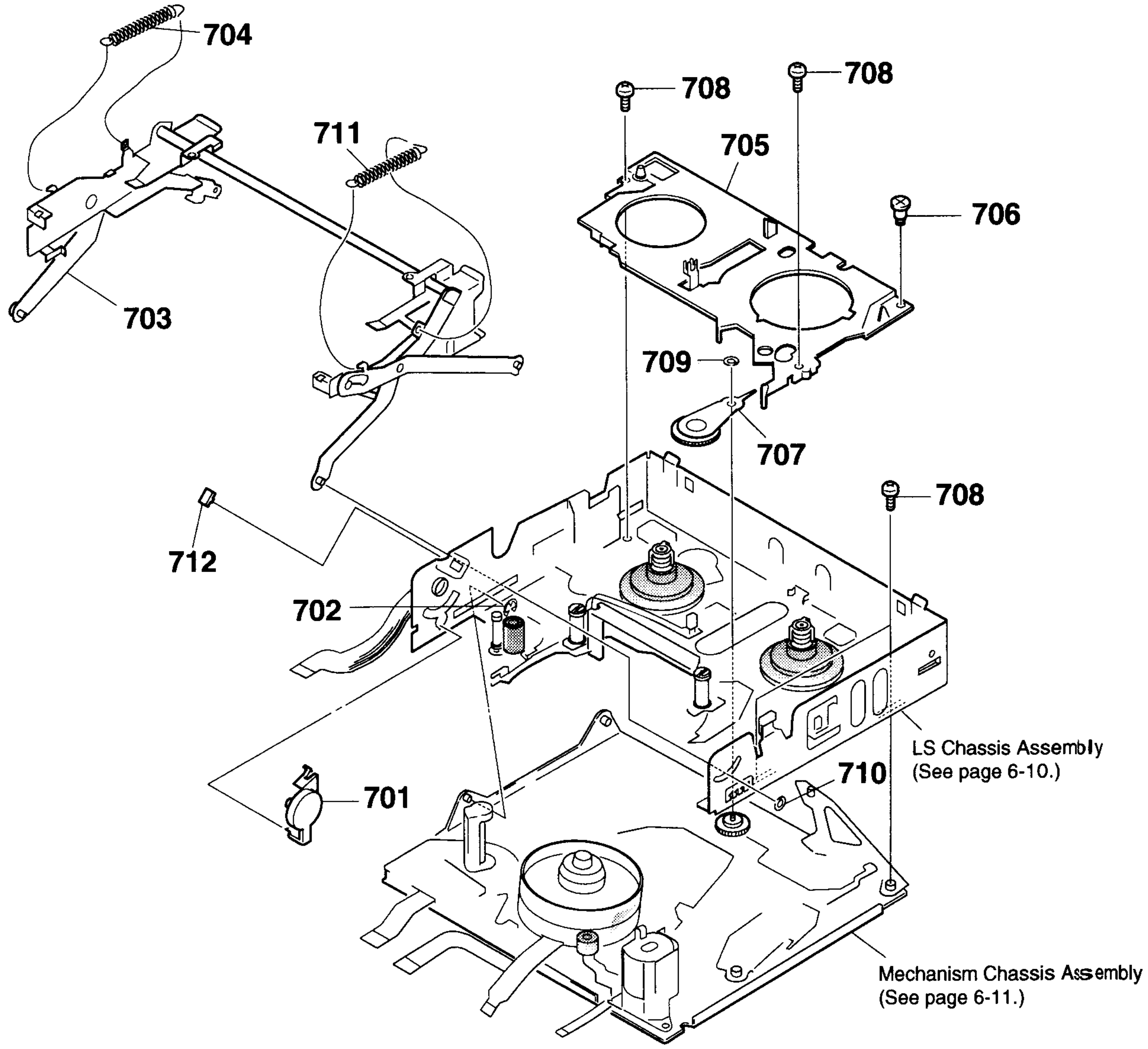
Ref. No.	Part No.	Description	Remark
351	8-848-710-01	LENS, ZOOM (VCL-4214VA)	
352	3-713-791-41	SCREW (M1.7X5), TAPPING, PS	
353	3-708-302-01	SCREW (BT3 P1.7X4C)	
354	A-4910-808-A	DEVICE ASSY, LSV-510A (RP)	
M905	1-698-760-01	MOTOR, FOCUS STEPPING	
M906	1-698-759-01	MOTOR, ZOOM STEPPING	

6-1-9. CASSETTE COMPARTMENT ASSEMBLY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LS Chassis Assembly
(See page 6-10.)
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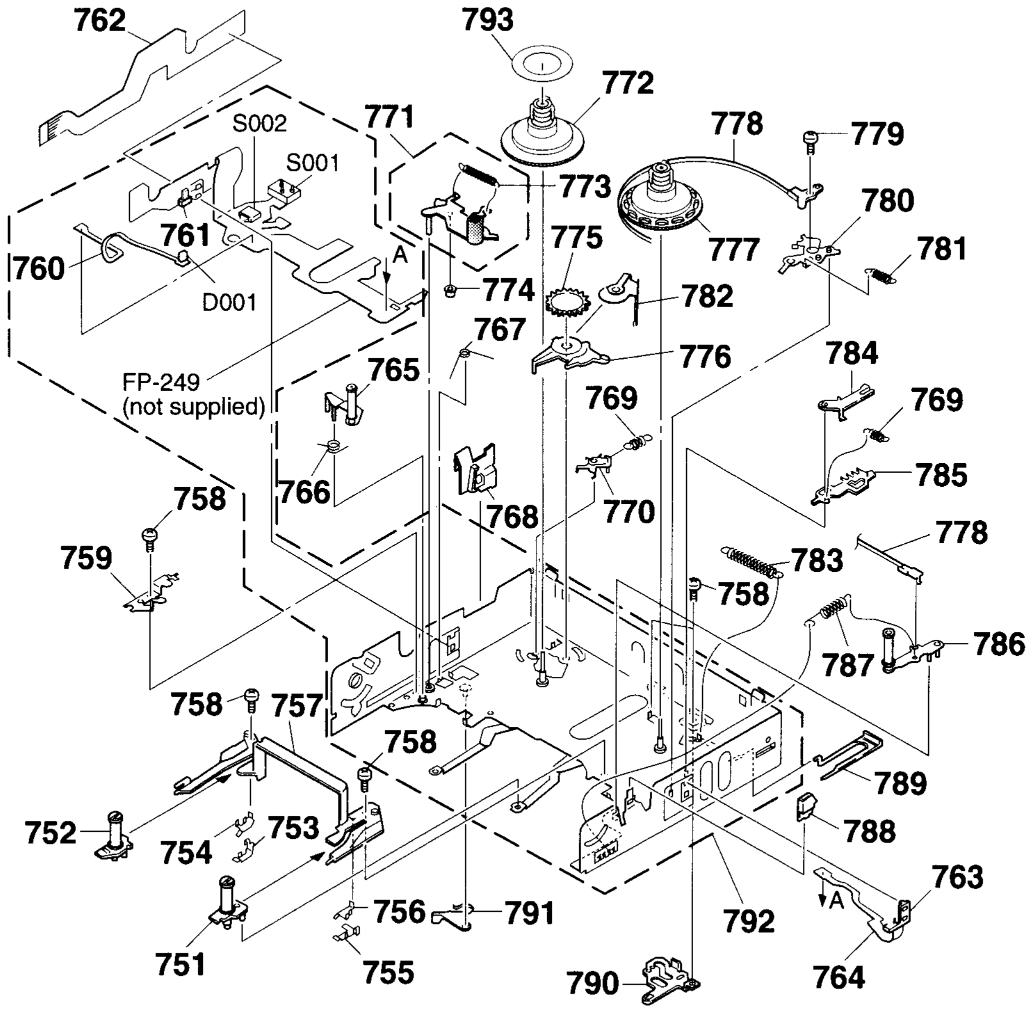
701
Mechanism Chassis Assembly
(See page 6-11.)

Ref. No.	Part No.	Description	Remark
701	A-7040-421-A	DAMPER ASSY	
702	7-624-102-04	STOP RING 1.5, TYPE -E	
703	X-3945-400-1	CASSETTE COMPARTMENT ASSY	
704	3-965-587-03	SPRING, TENSION	
705	3-965-584-01	RETAINER, GOOSENECK	
706	3-976-055-01	SCREW (M1.4X1)	
707	X-3945-399-1	GEAR ASSY, GOOSENECK	
708	3-947-503-01	SCREW (M1.4X2.5)	
709	3-331-007-21	WASHER	
710	3-727-176-01	WASHER, STOPPER	
711	3-973-268-01	SPRING, TENSION	
712	3-971-076-01	FASTENER, D	

6-1-10. LS CHASSIS ASSEMBLY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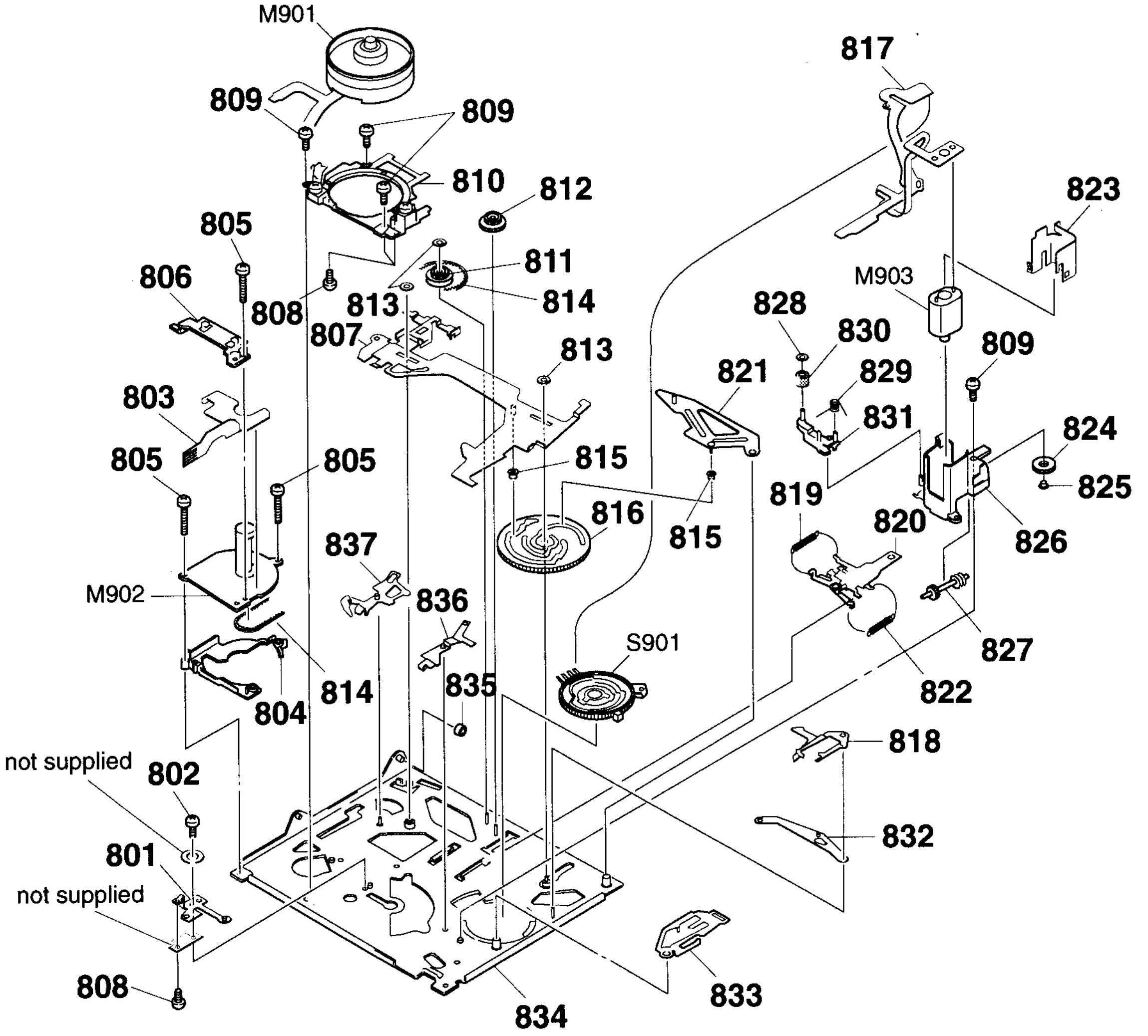
Ref. No.	Part No.	Description	Remark
751	A-7040-419-A	BASE (S) BLOCK ASSY, GUIDE	
752	A-7040-418-B	BASE (T) BLOCK ASSY, GUIDE	
753	3-965-559-01	STOPPER (T)	
754	3-965-557-01	STOPPER (T), GB	
755	3-965-558-01	STOPPER (S)	
756	3-965-556-01	STOPPER (S), GB	
757	3-965-553-01	RAIL, GUIDE	
758	3-947-503-01	SCREW (M1.4X2.5)	
759	3-965-573-01	RETAINER, TG4	
760	1-658-213-11	FP-355 FLEXIBLE BOARD	
761	3-965-552-01	HOLDER (T), SENSOR	
762	1-657-786-11	FP-221 FLEXIBLE BOARD	
763	3-965-551-01	HOLDER (S), SENSOR	
764	1-658-214-11	FP-356 FLEXIBLE BOARD	
765	A-7040-417-A	ARM BLOCK ASSY, TG4	
766	3-965-574-01	SPRING, TORSION	
767	3-965-575-01	SPRING (PINCH), TORSION	
768	3-965-568-01	GUIDE, LOCK	
769	3-965-562-01	SPRING (RATCHET), TENSION	
770	3-965-581-01	RATCHET, T	
771	X-3945-394-1	ARM ASSY, PINCH	
772	X-3945-398-1	DECK ASSY, REEL, T	
773	3-965-648-01	SPRING (PINCH), TENSION	
774	3-965-579-01	ROLLER, PINCH PRESS	
775	3-965-563-01	GEAR, T SOFT	
776	3-965-565-01	CLAW, T SOFT	
777	X-3945-397-1	DECK ASSY, REEL, S	
778	X-3945-396-1	BAND ASSY, TENSION REGULATOR	
779	3-945-756-01	SCREW (M1.4X3)	
780	3-965-583-01	ARM, RVS	
781	3-965-580-01	SPRING, TENSION	
782	3-966-384-01	SPRING, T SOFT	
783	3-965-578-01	SPRING, TENSION	
784	3-965-560-01	RATCHET, S	
785	3-965-561-01	PLATE, RELEASE, S RATCHET	
786	X-3945-395-1	ARM ASSY, TG1	
787	3-965-576-01	SPRING (TG1), TENSION	
788	3-965-567-01	LID OPEN	
789	3-965-566-01	COVER, LS GUIDE	
* 790	3-965-577-01	PLATE, CAM, LS	
791	3-965-569-01	ARM, EJ	
792	A-7040-427-A	CHASSIS (S1) ASSY, LS	
* 793	3-972-838-01	SPACER, REEL	
D001	8-719-988-42	DIODE GL453	
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi8 MP, ME/MP, REC PROOF)	
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C. LOCK)	

6-1-11. MECHANISM CHASSIS ASSEMBLY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S901
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not supplied
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Ref. No.	Part No.	Description	Remark
801	X-3947-343-1	GROUND (IM) ASSY, SHAFT	
802	3-965-550-02	SCREW (M1.7X1.6)	
803	1-657-785-11	FP-248 FLEXIBLE BOARD	
804	3-965-545-01	SPACER, CAPSTAN	
805	3-965-549-01	SCREW (M1.4 X 6.5)	
806	3-966-349-01	HOLDER, FLEXIBLE	
807	3-971-644-01	SLIDER (2), M	
808	3-971-939-01	SCREW (M1.4)	
809	3-947-503-01	SCREW (M1.4X2.5)	
810	A-7040-416-A	BASE BLOCK ASSY, DRUM	
811	3-965-527-01	GEAR, CHANGE	
812	3-965-544-01	GEAR, RELAY	
813	3-331-007-21	WASHER	
814	3-965-546-01	BELT, TIMING	
815	3-965-533-01	ROLLER, LS	
816	3-965-528-01	GEAR, CAM	
817	1-657-784-11	FP-220 FLEXIBLE BOARD	
818	3-965-529-01	PLATE, REGULATOR, TENSION	
819	3-965-536-01	SPRING, TENSION	
820	X-3945-388-1	SLIDER ASSY, GL	
821	3-965-532-01	ARM, LS	
822	3-965-535-01	SPRING, TENSION	
823	3-965-542-01	SHIELD, MOTOR	
824	3-965-539-01	GEAR (A)	
825	3-965-538-01	SLEEVE, MOTOR HOLDER	
826	3-965-540-01	HOLDER, MOTOR	
827	3-965-541-01	SHAFT, WORM	
828	3-321-393-01	WASHER, STOPPER	
829	3-965-724-01	SPRING, TORSION	
830	A-7040-423-A	ROLLER BLOCK ASSY, HC	
831	X-3945-407-1	ARM ASSY, HC ROLLER	
832	3-965-531-01	ARM, GL	
833	3-965-530-01	PLATE (2), REGULATOR, TENSION	
834	X-3946-548-2	CHASSIS ASSY, MECHANICAL	
835	3-965-526-02	ROLLER, LS GUIDE	
836	3-965-547-01	ARM, HC DRIVING	
837	3-965-534-01	PLATE, PRESS, PINCH	
M901	A-7048-851-A	DRUM ASSY (DGH-0D5A-R) (TR820E/TR825E/TR920E)	
M901	A-7048-849-A	DRUM ASSY (DGH-0D4A-R)(TR930)	
M902	8-835-531-01	MOTOR, DC SCE-0601A (CAPSTAN)	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	

6-2. ELECTRICAL PARTS LIST

Note:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μ A..., uPA...: μ PA..., uPB...: μ PB..., uPC...: μ PC..., uPD...: μ PD...
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H
- Canadian model is abbreviated as CND.
- East European model is abbreviated as EE.
- North European model is abbreviated as NE.
- Russian model is abbreviated as RU.
- Australian model is abbreviated as AUS.
- Tourist model is abbreviated as JE.

Ref. No.	Part No.	Description			Remark
	A-7073-100-A	CD-166 BOARD, COMPLETE ***********************			
		(IC401 is not included to the mounted board) (Ref. No. 3,000 Series)			
		< CAPACITOR >			
C401	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C405	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V
C406	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V
C407	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
		< CONNECTOR >			
CN401	1-766-677-21	CONNECTOR, FFC/FPC 16P			
		< IC >			
IC401	A-7030-615-A	CCD BLOCK ASSY (CCD IMAGER)(079 SERVICE)			(TR920E/TR930)
IC401	A-7030-782-A	CCD BLOCK ASSY (CCD IMAGER)(211 SERVICE)			(TR820E/TR825E)
		< COIL >			
L401	1-412-963-11	INDUCTOR	100uH		
		< TRANSISTOR >			
Q402	8-729-117-73	TRANSISTOR	2SC4178-F14		
		< RESISTOR >			
R404	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
	A-7093-226-A	DD-95 (HD) BOARD, COMPLETE (TR825E) ************************************			
	A-7093-292-A	DD-95 (HP) BOARD, COMPLETE (TR820E) ************************************			
	A-7093-265-A	DD-95 (HCPE) BOARD, COMPLETE (TR920E) *************************************			
	A-7093-229-A	DD-95 (HCI) BOARD, COMPLETE (TR930) ****************************			
		(Ref. No. 5,000 Series)			
		< CAPACITOR >			
C501	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C502	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C503	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C504	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C505	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C506	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C507	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C508	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C509	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C510	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C511	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C512	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C513	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C514	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C515	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C516	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C517	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C518	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C525	1-135-159-21	TANTALUM CHIP	10uF	10%	20V
C526	1-135-159-21	TANTALUM CHIP	10uF	10%	20V
C527	1-135-165-11	TANTAL. CHIP	33uF	20%	16V
C530	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C531	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C532	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C533	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C534	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C535	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C536	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C537	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C538	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C539	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C540	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C541	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V
C542	1-113-985-11	TANTAL. CHIP	10uF	20%	20V
C543	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C544	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C545	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C546	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C547	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C548	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C549	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V (TR920E/TR930)
C550	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V (TR920E/TR930)
C551	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V (TR825E/TR920E/TR930)

Be sure to read "Note on the CCD Imager replacement" on page 4–8 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
CN501	1-569-775-21	PIN, CONNECTOR 5P	
CN502	1-691-520-11	CONNECTOR, BOARD TO BOARD 48P	
		< DIODE >	
D501	8-719-057-68	DIODE SBS001C-TB	
D502	8-719-057-68	DIODE SBS001C-TB	
D503	8-719-057-68	DIODE SBS001C-TB	
D504	8-719-057-68	DIODE SBS001C-TB	
D505	8-719-027-77	DIODE MA796	
D506	8-719-057-68	DIODE SBS001C-TB	
D507	8-719-420-14	DIODE MA8082-M	
D508	8-719-420-14	DIODE MA8082-M	
		< IC >	
IC501	8-759-350-29	IC SN104213PM-T6	
		< COIL >	
L501	1-409-529-41	COIL, CHOKE 10uH	
L502	1-409-529-41	COIL, CHOKE 10uH	
L503	1-409-529-41	COIL, CHOKE 10uH	
L504	1-424-674-11	COIL, CHOKE 22uH	
L505	1-409-532-41	COIL, CHOKE 33uH	
L506	1-424-674-11	COIL, CHOKE 22uH	
L507	1-424-674-11	COIL, CHOKE 22uH	
L508	1-414-396-21	INDUCTOR 4.7uH	
L509	1-414-396-21	INDUCTOR 4.7uH	
L511	1-414-406-11	INDUCTOR 220uH	
L512	1-424-674-11	COIL, CHOKE 22uH	
L513	1-414-400-11	INDUCTOR 22uH	
L514	1-414-396-21	INDUCTOR 4.7uH	
L515	1-414-396-21	INDUCTOR 4.7uH	
L516	1-414-396-21	INDUCTOR 4.7uH	
		< IC LINK >	
⚠PS501	1-533-709-21	FUSE (SMD)(1.25A)(TR930)	
⚠PS501	1-533-711-21	LINK, IC (SMD)(1.25A)(TR820E/TR825E/TR920E)	
⚠PS502	1-533-709-21	FUSE (SMD)(1.25A)(TR930)	
⚠PS502	1-533-711-21	LINK, IC (SMD)(1.25A)(TR820E/TR825E/TR920E)	
⚠PS503	1-533-709-21	FUSE (SMD)(1.25A)(TR930)	
⚠PS503	1-533-711-21	LINK, IC (SMD)(1.25A)(TR820E/TR825E/TR920E)	
⚠PS504	1-533-709-21	FUSE (SMD)(1.25A)(TR930)	
⚠PS504	1-533-711-21	LINK, IC (SMD)(1.25A)(TR825E/TR920E)	
		< TRANSISTOR >	
Q501	8-729-039-86	TRANSISTOR FMMT717TA	
Q502	8-729-039-86	TRANSISTOR FMMT717TA	
Q503	8-729-039-86	TRANSISTOR FMMT717TA	
Q504	8-729-039-86	TRANSISTOR FMMT717TA	
Q505	8-729-041-24	TRANSISTOR NDS355AN	
Q506	8-729-804-41	TRANSISTOR 2SB1122-S	
Q507	8-729-039-86	TRANSISTOR FMMT717TA	
Q508	8-729-429-18	TRANSISTOR UN9213	
Q509	8-729-425-50	TRANSISTOR 2SB1462Q	
Q510	8-729-425-50	TRANSISTOR 2SB1462Q	
Q511	8-729-425-64	TRANSISTOR 2SD2216Q	

Ref. No.	Part No.	Description	Remark
Q512	8-729-425-64	TRANSISTOR 2SD2216Q	
Q513	8-729-425-64	TRANSISTOR 2SD2216Q (TR920E/TR930)	
Q514	8-729-429-18	TRANSISTOR UN9213 (TR920E/TR930)	
Q515	8-729-041-23	TRANSISTOR NDS356AP (TR920E/TR930)	
Q517	8-729-429-18	TRANSISTOR UN9213 (TR920E/TR930)	
Q518	8-729-041-23	TRANSISTOR NDS356AP (TR920E/TR930)	
Q519	8-729-429-18	TRANSISTOR UN9213 (TR825E/TR920E/TR930)	
Q520	8-729-429-18	TRANSISTOR UN9213 (TR825E/TR920E/TR930)	
Q521	8-729-041-24	TRANSISTOR NDS355AN	(TR825E/TR920E/TR930)
		< RESISTOR >	
R501	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R502	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R503	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R504	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R505	1-218-907-11	METAL GLAZE 330K 0.50% 1/16W	
R506	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R507	1-216-813-11	METAL CHIP 220 5% 1/16W	
R508	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R509	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R510	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R511	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R512	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R513	1-216-864-11	METAL CHIP 0 5% 1/16W	
R514	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R515	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R516	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R517	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R518	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R519	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R520	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R521	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R522	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R523	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R524	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R525	1-218-877-11	METAL GLAZE 18K 0.50% 1/16W	
R526	1-218-879-11	METAL GLAZE 22K 0.50% 1/16W	(TR930)
R526	1-218-893-11	METAL GLAZE 82K 0.50% 1/16W	(TR820E/825E/TR920E)
R527	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR820E/825E/TR920E)
R527	1-218-891-11	METAL GLAZE 68K 0.50% 1/16W	(TR930)
R528	1-216-845-11	METAL CHIP 100K 5% 1/16W	(TR920E/TR930)
R529	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TR920E/TR930)
R531	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR820E/825E)
R533	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TR920E/TR930)
R534	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TR920E/TR930)
R536	1-216-845-11	METAL CHIP 100K 5% 1/16W	(TR825E/TR920E/TR930)
R537	1-216-845-11	METAL CHIP 100K 5% 1/16W	(TR825E/TR920E/TR930)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
R538	1-216-851-11	METAL CHIP 330K 5%	1/16W (TR825E/TR920E/TR930)
R539	1-216-857-11	METAL CHIP 1M 5%	1/16W (TR825E/TR920E/TR930)
R540	1-216-797-11	METAL CHIP 10 5%	1/16W
R541	1-216-864-11	METAL CHIP 0 5%	1/16W
R542	1-216-821-11	METAL CHIP 1K 5%	1/16W
R543	1-216-296-91	CONDUCTOR, CHIP (3216)	
R550	1-216-857-11	METAL CHIP 1M 5%	1/16W (TR920E/TR930)
R551	1-216-845-11	METAL CHIP 100K 5%	1/16W (TR825E/TR920E/TR930)
		< TRANSFORMER >	
⚠T501	1-426-938-11	TRANSFORMER, DC/DC CONVERTER	

FP-249 FLEXIBLE BOARD

****

(Ref. No. 8,000 Series)

	1-658-214-11	FP-356 FLEXIBLE BOARD	
	3-965-551-01	HOLDER (S), SENSOR	
	3-965-552-01	HOLDER (T), SENSOR	
		< HALL ELEMENT >	
H001	8-719-033-37	ELEMENT, HALL HW-105C	
H002	8-719-033-37	ELEMENT, HALL HW-105C	
		< TRANSISTOR >	
Q001	8-729-907-25	TRANSISTOR PT4850F	
Q002	8-729-907-25	TRANSISTOR PT4850F	
		< SWITCH >	
S001	1-692-614-11	SWITCH, PUSH (3 KEY)	(Hi8 MP, ME/MP, REC PROOF)
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C. LOCK)	

1-658-213-11 FP-355 FLEXIBLE BOARD

****

(Ref. No. 8,000 Series)

		< DIODE >	
D001	8-719-988-42	DIODE GL453S	

A-7073-096-A LB-50 BOARD, COMPLETE (TR920E/TR930)

****

(Ref. No. 1,000 Series)

		< CAPACITOR >	
C801	1-104-917-11	TANTAL. CHIP 15uF 20% 20V	
C802	1-115-363-11	CERAMIC CHIP 10uF 10V	
C803	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C804	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
C805	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
C806	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
* CN801	1-573-333-21	CONNECTOR, BOARD TO BOARD 10P	
		< COIL >	
L801	1-412-030-11	INDUCTOR CHIP 22uH	
L802	1-412-029-11	INDUCTOR CHIP 10uH	
		< FLUORECENT INDICATOR >	
⚠ND801	1-517-414-21	FLUORESCENT TUBE (0.55 INCH)	
		< TRANSISTOR >	
Q801	8-729-039-24	TRANSISTOR FX216-TL1	
		< RESISTOR >	
R802	1-216-839-11	METAL CHIP 33K 5%	1/16W
		< TRANSFORMER >	
⚠T801	1-429-756-21	TRANSFORMER, INVERTER	

A-7073-173-A LC-56 (HCI) BOARD, COMPLETE

****

(Ref. No. 6,000 Series)

		< BUZZER >	
BZ151	1-529-107-11	BUZZER, PIEZOELECTRIC	
		< CAPACITOR >	
C151	1-162-974-11	CERAMIC CHIP 0.01uF	50V
		< CONNECTOR >	
CN151	1-764-707-21	CONNECTOR, FFC/FPC (LIF) 8P	
CN152	1-766-350-21	CONNECTOR, FFC/EPC (ZIF) 20P	
		< IC >	
IC151	8-759-073-95	IC SED1510FOC	
		< RESISTOR >	
R151	1-216-864-11	METAL CHIP 0 5%	1/16W
R153	1-216-855-11	METAL CHIP 680K 5%	1/16W

A-7073-168-A MI-29 (HP) BOARD, COMPLETE

****

(TR820E/TR825E/TR920E)

A-7073-172-A MI-29 (HCI) BOARD, COMPLETE (TR930)

****

(Ref. No. 4,000 Series)

		< CAPACITOR >	
C303	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C304	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C305	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
C306	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C307	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C308	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C309	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C310	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C311	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C312	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C313	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C314	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C315	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C316	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C317	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C318	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C319	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C320	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C321	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C322	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C323	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C324	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C325	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C326	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C327	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C328	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C329	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C330	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C331	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C332	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C333	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C334	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C335	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C336	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C337	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C338	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C339	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C340	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C341	1-164-346-11	CERAMIC CHIP	1uF		16V
C342	1-164-346-11	CERAMIC CHIP	1uF		16V
C343	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C345	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C346	1-164-346-11	CERAMIC CHIP	1uF		16V
C347	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C361	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C362	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V (TR930)
C363	1-135-201-11	TANTALUM CHIP	10uF	20%	4V (TR930)
C365	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V (TR930)
C366	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C367	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V (TR930)
C368	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V (TR930)
C369	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C370	1-135-201-11	TANTALUM CHIP	10uF	20%	4V (TR930)

Ref. No.	Part No.	Description			Remark
C371	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V (TR930)
C372	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C373	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V (TR930)
C374	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C375	1-164-668-11	CERAMIC CHIP	510PF	5%	50V (TR930)
C376	1-135-091-00	TANTALUM CHIP	1uF	20%	16V (TR930)
C377	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V (TR930)
C378	1-135-091-00	TANTALUM CHIP	1uF	20%	16V (TR930)
C379	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V (TR930)
C380	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C381	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C382	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V (TR930)
C383	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V (TR930)
C385	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C386	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V (TR930)
C387	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V (TR930)
C388	1-104-908-11	TANTAL. CHIP	47uF	20%	4V (TR930)
C389	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V (TR930)
C390	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V (TR930)
C391	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V (TR930)
C392	1-162-947-11	CERAMIC CHIP	33PF	5%	50V (TR930)
C393	1-162-922-11	CERAMIC CHIP	39PF	5%	50V (TR930)
C395	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V (TR930)
C396	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V (TR930)
		< CONNECTOR >			
* CN301	1-695-320-21	PIN, CONNECTOR (1.5MM) (SMD)2P			
* CN302	1-695-320-21	PIN, CONNECTOR (1.5MM) (SMD)2P			
CN303	1-779-337-21	CONNECTOR, FFC/FPC 26P			
		< DIODE >			
D303	8-719-404-49	DIODE MA111			
D304	8-719-061-82	DIODE TLSU1002			
D362	8-749-060-65	DIODE DCC3810 (TR930)			
D363	8-719-061-86	DIODE DCR2810 (TR930)			

MI-29

Ref. No.	Part No.	Description			Remark
		< FUSE >			
⚠F361	1-533-844-21	FUSE, MICRO 200mA 63V (PU200)(TR930)			
		< IC >			
IC301	8-759-248-31	IC BA7780KV-E2			
IC302	8-749-012-83	IC RS-180-T			
IC361	8-759-455-09	IC LA9510W-TBM (TR930)			
		< JACK >			
J301	1-691-737-11	JACK, SMALL TYPE (MIC)			
		< COIL >			
L362	1-412-948-11	INDUCTOR	5.6uH (TR930)		
L363	1-414-078-11	INDUCTOR	10uH (TR930)		
L364	1-412-957-11	INDUCTOR	33uH (TR930)		
L365	1-412-957-11	INDUCTOR	33uH (TR930)		
		< TRANSISTOR >			
Q362	8-729-122-63	TRANSISTOR	2SA1226 (TR930)		
Q364	8-729-425-50	TRANSISTOR	2SB1462Q (TR930)		
Q365	8-729-140-75	TRANSISTOR	2SD999-CLCK (TR930)		
		< RESISTOR >			
R301	1-216-864-11	METAL CHIP	0	5%	1/16W
R302	1-216-864-11	METAL CHIP	0	5%	1/16W
R303	1-216-864-11	METAL CHIP	0	5%	1/16W
R306	1-216-835-11	METAL CHIP	15K	5%	1/16W
R307	1-216-835-11	METAL CHIP	15K	5%	1/16W
R308	1-216-839-11	METAL CHIP	33K	5%	1/16W
R309	1-216-836-11	METAL CHIP	18K	5%	1/16W
R310	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R311	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R312	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R313	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R314	1-216-821-11	METAL CHIP	1K	5%	1/16W
R315	1-216-821-11	METAL CHIP	1K	5%	1/16W
R316	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R317	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R318	1-216-833-11	METAL CHIP	10K	5%	1/16W
R319	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R320	1-216-833-11	METAL CHIP	10K	5%	1/16W
R321	1-216-864-11	METAL CHIP	0	5%	1/16W
R322	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R323	1-216-833-11	METAL CHIP	10K	5%	1/16W
R324	1-216-836-11	METAL CHIP	18K	5%	1/16W
R325	1-216-864-11	METAL CHIP	0	5%	1/16W
R326	1-216-833-11	METAL CHIP	10K	5%	1/16W
R327	1-216-836-11	METAL CHIP	18K	5%	1/16W
R328	1-216-839-11	METAL CHIP	33K	5%	1/16W
R329	1-216-839-11	METAL CHIP	33K	5%	1/16W
R330	1-216-835-11	METAL CHIP	15K	5%	1/16W
R331	1-216-835-11	METAL CHIP	15K	5%	1/16W
R332	1-216-835-11	METAL CHIP	15K	5%	1/16W
R333	1-216-835-11	METAL CHIP	15K	5%	1/16W
R334	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R336	1-216-839-11	METAL CHIP	33K	5%	1/16W
R337	1-216-834-11	METAL CHIP	12K	5%	1/16W
R339	1-216-839-11	METAL CHIP	33K	5%	1/16W
R341	1-216-818-11	METAL CHIP	560	5%	1/16W
R342	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R343	1-216-824-11	METAL CHIP	1.8k	5%	1/16W
R345	1-216-805-11	METAL CHIP	47	5%	1/16W
R361	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR930)
R363	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR930)
R365	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R366	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R367	1-216-853-11	METAL CHIP	470K	5%	1/16W (TR930)
R369	1-218-879-11	METAL GLAZE	22K	0.50%	1/16W (TR930)
R370	1-216-815-11	METAL CHIP	330	5%	1/16W (TR930)
R371	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR930)
R373	1-216-817-11	METAL CHIP	470	5%	1/16W (TR930)
R375	1-216-818-11	METAL CHIP	560	5%	1/16W (TR930)
R376	1-216-831-11	METAL CHIP	6.8K	5%	1/16W (TR930)
R377	1-216-817-11	METAL CHIP	470	5%	1/16W (TR930)
R378	1-216-817-11	METAL CHIP	470	5%	1/16W (TR930)
R382	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R384	1-216-817-11	METAL CHIP	470	5%	1/16W (TR930)
R385	1-216-823-11	METAL CHIP	1.5K	5%	1/16W (TR930)
R386	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)
R387	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR930)
R389	1-216-311-00	METAL CHIP	6.8	5%	1/10W (TR930)
R390	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)
R392	1-216-847-11	METAL CHIP	150K	5%	1/16W (TR930)
R393	1-216-847-11	METAL CHIP	150K	5%	1/16W (TR930)
R397	1-216-864-11	METAL CHIP	0	5%	1/16W (TR930)
R398	1-216-302-00	METAL CHIP	2.7	5%	1/10W (TR930)
R399	1-216-864-11	METAL CHIP	0	5%	1/16W (TR930)

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Ref. No.	Part No.	Description			Remark
	A-7073-167-A	MM-35 (HDP) BOARD, COMPLETE (TR825E)			
		***********************************			
	A-7073-174-A	MM-35 (HCI) BOARD, COMPLETE			
		***************************			
					(TR820E/TR920E/TR930) (Ref. No. 2,000 Series)
		< CAPACITOR >			
C701	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V (TR825E)
C702	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR825E)
C703	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR825E)
C704	1-162-923-11	CERAMIC CHIP	47PF	5%	50V (TR825E)
C705	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR825E)
C706	1-162-923-11	CERAMIC CHIP	47PF	5%	50V (TR825E)
C707	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V (TR825E)
C708	1-162-925-11	CERAMIC CHIP	68PF	5%	50V (TR825E)
C709	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR825E)
C710	1-135-201-11	TANTALUM CHIP	10uF	20%	4V (TR825E)
C711	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR825E)
C712	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR825E)
C713	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (TR825E)
C714	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR825E)
C715	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR825E)
C719	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR825E)
C720	1-135-201-11	TANTALUM CHIP	10uF	20%	4V (TR825E)
		< CONNECTOR >			
CN701	1-778-080-11	CONNECTOR, BOARD TO BOARD 70P (TR825E)			
CN702	1-766-677-21	CONNECTOR, FFC/FPC 16P			
CN703	1-764-709-11	CONNECTOR, FFC/FPC 10P			
CN704	1-766-342-21	CONNECTOR, FFC/FPC 12P			
		< DIODE >			
D701	8-719-062-16	DIODE 01ZA8.2(TPL3)			
D702	8-719-062-16	DIODE 01ZA8.2(TPL3)			
D703	8-719-062-16	DIODE 01ZA8.2(TPL3)			
D705	8-719-062-16	DIODE 01ZA8.2(TPL3)			
D706	8-719-062-16	DIODE 01ZA8.2(TPL3)			
		< FERRITE BEAD >			
FB702	1-414-228-11	INDUCTOR, FERRITE BEAD			
FB711	1-414-228-11	INDUCTOR, FERRITE BEAD			
FB712	1-414-228-11	INDUCTOR, FERRITE BEAD			
FB713	1-414-228-11	INDUCTOR, FERRITE BEAD			

Ref. No.	Part No.	Description			Remark
		< IC >			
IC701	8-759-421-52	IC MB87B110CPFV-G-BND-ER (TR825E)			
		< COIL >			
L701	1-414-754-11	INDUCTOR	10uH (TR825E)		
L702	1-412-950-11	INDUCTOR	8.2uH (TR825E)		
L703	1-414-754-11	INDUCTOR	10uH (TR825E)		
L704	1-414-754-11	INDUCTOR	10uH (TR825E)		
L705	1-410-658-31	INDUCTOR CHIP	220uH (TR825E)		
		< TRANSISTOR >			
Q701	8-729-425-64	TRANSISTOR	2SD2216Q (TR825E)		
Q702	8-729-425-64	TRANSISTOR	2SD2216Q (TR825E)		
Q703	8-729-425-64	TRANSISTOR	2SD2216Q (TR825E)		
Q704	8-729-037-59	TRANSISTOR	UN9111J-(TX).SO (TR825E)		
Q705	8-729-425-64	TRANSISTOR	2SD2216Q (TR825E)		
Q706	8-729-429-18	TRANSISTOR	UN9213		
Q707	8-729-425-50	TRANSISTOR	2SB1462Q		
		< RESISTOR >			
R701	1-216-839-11	METAL CHIP	33K	5%	1/16W (TR825E)
R702	1-216-838-11	METAL CHIP	27K	5%	1/16W (TR825E)
R703	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR825E)
R704	1-216-819-11	METAL CHIP	680	5%	1/16W (TR825E)
R705	1-216-812-11	METAL CHIP	180	5%	1/16W (TR825E)
R706	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR825E)
R707	1-216-824-11	METAL CHIP	1.8K	5%	1/16W (TR825E)
R708	1-216-816-11	METAL CHIP	390	5%	1/16W (TR825E)
R709	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR825E)
R710	1-216-826-11	METAL CHIP	2.7K	5%	1/16W (TR825E)
R711	1-216-820-11	METAL CHIP	820	5%	1/16W (TR825E)
R712	1-216-826-11	METAL CHIP	2.7K	5%	1/16W (TR825E)
R713	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR825E)
R714	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR825E)
R715	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR825E)
R716	1-216-819-11	METAL CHIP	680	5%	1/16W (TR825E)
R719	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR825E)
R720	1-216-816-11	METAL CHIP	390	5%	1/16W (TR825E)
R721	1-216-817-11	METAL CHIP	470	5%	1/16W (TR825E)
R722	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR825E)

Ref. No.	Part No.	Description			Remark
R723	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR825E)
R724	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR825E)
R725	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR825E)
R726	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR825E)
R727	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR825E)
R743	1-216-821-11	METAL CHIP	1K	5%	1/16W
R744	1-216-821-11	METAL CHIP	1K	5%	1/16W
R745	1-216-821-11	METAL CHIP	1K	5%	1/16W
R746	1-216-821-11	METAL CHIP	1K	5%	1/16W
R747	1-216-821-11	METAL CHIP	1K	5%	1/16W
R748	1-216-821-11	METAL CHIP	1K	5%	1/16W
R749	1-216-821-11	METAL CHIP	1K	5%	1/16W
R750	1-216-819-11	METAL CHIP	680	5%	1/16W
R751	1-216-841-11	METAL CHIP	47K	5%	1/16W
R755	1-216-821-11	METAL CHIP	1K	5%	1/16W
R756	1-216-864-11	METAL CHIP	0	5%	1/16W

A-7073-101-A PJ-80 (VHCRJ) BOARD, COMPLETE (TR920E)
****

A-7073-121-A PJ-80 (VHCRP) BOARD, COMPLETE
****
(TR820E/TR825E)

A-7073-176-A PJ-80 (HCI) BOARD, COMPLETE (TR930)
****
(Ref. No. 3,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C101	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	(TR820E/TR825E)
C102	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	(TR820E/TR825E)
C103	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	(TR820E/TR825E)
C104	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	(TR820E/TR825E)
C105	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V	
C106	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	(TR820E/TR825E/TR930)
C107	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	(TR820E/TR825E)
C108	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	(TR820E/TR825E/TR930)
C109	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	(TR820E/TR825E/TR930)
C110	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	(TR820E/TR825E)
C111	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	(TR820E/TR825E/TR930)

< CONNECTOR >

Ref. No.	Part No.	Description
CN101	1-764-516-21	CONNECTOR, FFC/FPC (ZIF) 6P
CN102	1-764-526-11	CONNECTOR, FFC/FPC (ZIF) 18P

< DIODE >

Ref. No.	Part No.	Description		Remark
D101	8-719-062-16	DIODE	01ZA8.2(TPL3)	
D102	8-719-062-16	DIODE	01ZA8.2(TPL3)	
D103	8-719-062-16	DIODE	01ZA8.2(TPL3)	
D104	8-719-062-16	DIODE	01ZA8.2(TPL3)	
D105	8-719-062-16	DIODE	01ZA8.2(TPL3)	
D106	8-719-062-16	DIODE	01ZA8.2(TPL3)	
D107	8-719-062-16	DIODE	01ZA8.2(TPL3)	
D108	8-719-420-14	DIODE	MA8082-M	

< JACK >

Ref. No.	Part No.	Description
J101	1-537-747-21	TERMINAL BOARD (S VIDEO, VIDEO, AUDIO, RFU DC OUT)

< COIL >

Ref. No.	Part No.	Description	
L101	1-414-072-11	INDUCTOR	1uH
L102	1-412-963-11	INDUCTOR	100uH (TR820E/TR825E)
L103	1-412-963-11	INDUCTOR	100uH (TR820E/TR825E)
L104	1-412-963-11	INDUCTOR	100uH (TR820E/TR825E)

< TRANSISTOR >

Ref. No.	Part No.	Description	
Q101	8-729-101-07	TRANSISTOR	2SB798-DL
Q102	8-729-425-64	TRANSISTOR	2SD2216Q

< RESISTOR >

Ref. No.	Part No.	Description			Remark
R101	1-216-864-11	METAL CHIP	0	5%	1/16W (TR920E/TR930)
R102	1-216-864-11	METAL CHIP	0	5%	1/16W (TR920E/TR930)
R103	1-216-295-91	CONDUCTOR, CHIP (2012)(TR920E)			
R103	1-412-963-11	INDUCTOR	100UH		(TR820E/TR825E/TR930)
R104	1-216-138-00	METAL CHIP	3.3	5%	1/8W
R105	1-216-864-11	METAL CHIP	0	5%	1/16W (TR920E/TR930)
R106	1-216-295-91	CONDUCTOR, CHIP (2012)(TR920E)			
R106	1-412-963-11	INDUCTOR	100UH		(TR820E/TR825E/TR930)
R107	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R108	1-216-820-11	METAL CHIP	820	5%	1/16W
R109	1-216-836-11	METAL CHIP	18K	5%	1/16W
R110	1-216-864-11	METAL CHIP	0	5%	1/16W
R111	1-216-864-11	METAL CHIP	0	5%	1/16W
R112	1-216-864-11	METAL CHIP	0	5%	1/16W
R120	1-216-821-11	METAL CHIP	1K	5%	1/16W
R121	1-216-821-11	METAL CHIP	1K	5%	1/16W

A-7073-175-A SE-61 (HCI) BOARD, COMPLETE
****
(Ref. No. 1,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			
C451	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C452	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C453	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C454	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V

Ref. No.	Part No.	Description			Remark
C455	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C456	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C457	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C458	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C459	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C460	1-128-257-21	ELECT CHIP	33uF	20%	10V
C461	1-128-257-21	ELECT CHIP	33uF	20%	10V
C462	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C467	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C468	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C469	1-115-156-11	CERAMIC CHIP	1uF		10V
		< CONNECTOR >			
CN451	1-766-673-21	CONNECTOR, FFC/FPC 12P			
		< FERRITE BEAD >			
FB451	1-414-228-11	INDUCTOR, FERRITE BEAD			
		< IC >			
IC451	8-759-080-34	IC TA75W01FU			
IC453	8-759-062-66	IC TC7S66F			
IC454	8-759-062-66	IC TC7S66F			
IC455	8-759-388-62	IC NJU7062M(TE2)			
		< COIL >			
L452	1-414-754-11	INDUCTOR	10uH		
		< RESISTOR >			
R451	1-216-837-11	METAL CHIP	22K	5%	1/16W
R452	1-216-837-11	METAL CHIP	22K	5%	1/16W
R453	1-216-837-11	METAL CHIP	22K	5%	1/16W
R454	1-216-837-11	METAL CHIP	22K	5%	1/16W
R455	1-216-837-11	METAL CHIP	22K	5%	1/16W
R456	1-216-837-11	METAL CHIP	22K	5%	1/16W
R457	1-216-803-11	METAL CHIP	33	5%	1/16W
R458	1-216-833-11	METAL CHIP	10K	5%	1/16W
R459	1-216-833-11	METAL CHIP	10K	5%	1/16W
R460	1-216-853-11	METAL CHIP	470K	5%	1/16W
R461	1-216-853-11	METAL CHIP	470K	5%	1/16W
R464	1-216-833-11	METAL CHIP	10K	5%	1/16W
R465	1-216-857-11	METAL CHIP	1M	5%	1/16W
R466	1-216-857-11	METAL CHIP	1M	5%	1/16W
R467	1-216-833-11	METAL CHIP	10K	5%	1/16W
R468	1-216-835-11	METAL CHIP	15K	5%	1/16W
		< SENSOR >			
SE451	1-810-725-71	SENSOR, ANGULAR VELOCITY (YAW)			
SE452	1-810-725-81	SENSOR, ANGULAR VELOCITY (PITCH)			
	A-7093-225-A	VC-190 (HDP) BOARD, COMPLETE (TR825E) ************************************			
	A-7093-227-A	VC-190 (HP) BOARD, COMPLETE (TR820E) ************************************			
	A-7093-228-A	VC-190 (HCI) BOARD, COMPLETE (TR930) ************************************			
	A-7093-264-A	VC-190 (HCPE) BOARD, COMPLETE (TR920E) ************************************			
					(Ref. No. 10,000 Series)
		< CAPACITOR >			
C251	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C252	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C253	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C254	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C255	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C256	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C258	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C263	1-115-156-11	CERAMIC CHIP	1uF		10V
C266	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C267	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C268	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C269	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C271	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C274	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C276	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1005	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1007	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1008	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TR820E/TR825E/TR920E)
C1009	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C1010	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TR820E/TR825E/TR920E)
C1011	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C1012	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C1013	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C1014	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C1015	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1016	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C1017	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR820E/TR825E/TR920E)
C1018	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR820E/TR825E/TR920E)
C1019	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR930)
C1020	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1021	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR930)
C1022	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR930)
C1023	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR930)
C1024	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR930)
C1025	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1026	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1027	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1028	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1029	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
					(TR930)
C1034	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1035	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description			Remark
C1036	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1037	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1039	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1040	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1041	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1042	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1043	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR920E/TR930)
C1044	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C1045	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C1046	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR930)
C1051	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1052	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR825E)
C1053	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1054	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1056	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR920E/TR930)
C1058	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1060	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1063	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1065	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1068	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C1070	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C1071	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1073	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C1074	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C1076	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C1077	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C1078	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V
C1080	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1081	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C1083	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C1084	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C1085	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C1086	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1087	1-162-921-11	CERAMIC CHIP	33PF	5%	50V (TR930)
C1087	1-162-922-11	CERAMIC CHIP	39PF	5%	50V (TR820E/TR825E/TR920E)
C1089	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C1090	1-162-922-11	CERAMIC CHIP	39PF	5%	50V (TR930)
C1090	1-162-925-11	CERAMIC CHIP	68PF	5%	50V (TR820E/TR825E/TR920E)
C1091	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C1092	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C1093	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V
C1094	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1095	1-162-921-11	CERAMIC CHIP	33PF	5%	50V (TR820E/TR825E/TR920E)
C1095	1-162-922-11	CERAMIC CHIP	39PF	5%	50V (TR930)
C1096	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1097	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1140	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description			Remark
C1141	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1144	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1147	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1149	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1150	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1152	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1153	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C1154	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1155	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1156	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1158	1-115-156-11	CERAMIC CHIP	1uF		10V
C1160	1-115-156-11	CERAMIC CHIP	1uF		10V
C1164	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1165	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1166	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1167	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1173	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR930)
C1201	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C1202	1-162-908-11	CERAMIC CHIP	3PF	0.25PF	50V
C1203	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C1204	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C1205	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1206	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1207	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1208	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1209	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1210	1-115-156-11	CERAMIC CHIP	1uF		10V
C1212	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1213	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1215	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1216	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1217	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1218	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1220	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C1222	1-115-156-11	CERAMIC CHIP	1uF		10V
C1223	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1224	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1227	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1228	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1229	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1230	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1231	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C1232	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C1233	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1234	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1236	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1237	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1240	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1280	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1282	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR920E/TR930)
C1283	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
C1285	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1301	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1302	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V
C1306	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description			Remark
C1307	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1308	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C1309	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C1310	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C1311	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C1312	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1313	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1314	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C1315	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1317	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1318	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C1319	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1320	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1321	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR920E/TR930)
C1322	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V (TR920E/TR930)
C1323	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V (TR920E/TR930)
C1324	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR920E/TR930)
C1326	1-162-927-11	CERAMIC CHIP	100PF	5%	50V (TR920E/TR930)
C1327	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR920E/TR930)
C1328	1-162-919-11	CERAMIC CHIP	22PF	5%	50V (TR920E/TR930)
C1330	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1331	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C1332	1-126-246-11	ELECT CHIP	220uF	20%	4V
C1333	1-126-246-11	ELECT CHIP	220uF	20%	4V
C1334	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C1335	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1336	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1337	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1338	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1339	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1340	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1342	1-164-217-11	CERAMIC CHIP	150PF	5%	50V (TR930)
C1342	1-162-928-11	CERAMIC CHIP	120PF	5%	50V (TR920E)
C1343	1-162-922-11	CERAMIC CHIP	39PF	5%	50V (TR930)
C1343	1-162-920-11	CERAMIC CHIP	27PF	5%	50V (TR920E)
C1344	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR930)
C1350	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V (TR930)
C1351	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1352	1-115-156-11	CERAMIC CHIP	1uF		10V (TR930)
C1353	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR930)
C1370	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C1403	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C1404	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C1405	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V

Ref. No.	Part No.	Description			Remark
C1406	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C1407	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C1409	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C1410	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1411	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C1412	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1414	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1415	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C1416	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C1417	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V
C1422	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C1423	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C1424	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1425	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C1426	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C1429	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1430	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1431	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C1432	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C1433	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1434	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1435	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C1437	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C1439	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V
C1463	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1465	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1466	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1468	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C1475	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1476	1-216-841-11	METAL CHIP	47K	5%	1/16W
C1477	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1481	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1486	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C1487	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C1488	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1489	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1490	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1492	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C1601	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C1602	1-115-156-11	CERAMIC CHIP	1uF		10V
C1604	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V
C1605	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1608	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1615	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1616	1-162-911-11	CERAMIC CHIP	6PF	0.5PF	50V
C1617	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1618	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1619	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1620	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1621	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1622	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1624	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1625	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C1626	1-164-346-11	CERAMIC CHIP	1uF		16V
C1628	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1629	1-115-156-11	CERAMIC CHIP	1uF		10V
C1630	1-162-919-11	CERAMIC CHIP	22PF	5%	50V

Ref. No.	Part No.	Description			Remark
C1631	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C1635	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1637	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1638	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1639	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1640	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1641	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1642	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C1643	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1644	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1645	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C1646	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C1647	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1701	1-115-156-11	CERAMIC CHIP	1uF		10V
C1702	1-115-156-11	CERAMIC CHIP	1uF		10V
C1752	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1753	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1754	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1755	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1756	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1757	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C1758	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C1760	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1761	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1762	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C1763	1-162-911-11	CERAMIC CHIP	6PF	0.5PF	50V
C1764	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C1765	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C1767	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C1768	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1769	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1770	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1771	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C1772	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C1776	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1777	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1779	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1851	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1852	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1853	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1854	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1855	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1856	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1857	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1858	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1859	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1860	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1861	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1862	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1863	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1864	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C1865	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1866	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1867	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1868	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1869	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C1870	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V

Ref. No.	Part No.	Description			Remark
C1871	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1872	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1873	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C1874	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C1875	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C1876	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C1877	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1878	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C1879	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1880	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1882	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1884	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1886	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1887	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C1888	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1951	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C1952	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1953	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1954	1-115-156-11	CERAMIC CHIP	1uF		10V
C1955	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1957	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C1958	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1959	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C1960	1-115-156-11	CERAMIC CHIP	1uF		10V
C1965	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1968	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1971	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1974	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1976	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C1978	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1980	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1981	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1982	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C1986	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1987	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C1989	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1990	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1991	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C2051	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V (TR920E/TR930)
C2052	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR920E/TR930)
C2054	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR920E/TR930)
C2055	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR920E/TR930)
C2056	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR920E/TR930)
C2057	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR920E/TR930)

< CONNECTOR >

Ref. No.	Part No.	Description
CN101	1-766-677-21	CONNECTOR, FFC/FPC 16P
CN102	1-774-639-21	CONNECTOR, FFC/FPC 15P
CN103	1-766-673-21	CONNECTOR, FFC/FPC 12P
CN104	1-766-340-21	CONNECTOR, FFC/FPC 10P
CN105	1-766-619-11	1ONNECTOR, FFC/FPC 8P
CN106	1-691-542-21	CONNECTOR, BOARD TO BOARD 48P

Ref. No.	Part No.	Description	Remark
CN111	1-779-334-11	CONNECTOR, FFC/FPC 20P	
CN112	1-779-332-11	CONNECTOR, FFC/FPC 16P	
CN113	1-691-361-11	CONNECTOR, FFC/FPC (ZIF) 23P	
CN202	1-774-637-11	CONNECTOR, FFC/FPC 13P	
CN204	1-778-075-11	CONNECTOR, BOARD TO BOARD 70P (TR825E)	
CN205	1-766-340-21	CONNECTOR, FFC/FPC 10P (TR825E/TR920E/TR930)	
CN207	1-691-354-21	CONNECTOR, FFC/FPC (ZIF) 16P	
CN208	1-573-935-11	CONNECTOR, FFC/FPC (ZIF) 26P	
CN1350	1-766-348-21	CONNECTOR, FFC/FPC 18P	
CN1951	1-691-354-21	CONNECTOR, FFC/FPC (ZIF) 16P	
CN1953	1-779-338-21	CONNECTOR, FFC/FPC 28P	
		< DIODE >	
D1201	8-719-055-86	DIODE KV1470TL1-3	
D1202	8-719-055-86	DIODE KV1470TL1-3	
D1305	8-719-404-49	DIODE MA111 (TR930)	
D1306	8-719-404-49	DIODE MA111 (TR930)	
D1350	8-719-404-49	DIODE MA111 (TR820E/TR825E)	
D1351	8-719-404-49	DIODE MA111 (TR820E/TR825E)	
D1352	8-719-404-49	DIODE MA111 (TR820E/TR825E)	
D1353	8-719-062-16	DIODE 01ZA8.2(TPL3)(TR825E/TR920ETR930)	
D1601	8-719-404-49	DIODE MA111	
D1602	8-713-102-28	DIODE 1T379-04-T8A	
D1951	8-719-404-49	DIODE MA111	
D1952	8-719-404-49	DIODE MA111	
D1953	8-719-404-49	DIODE MA111	
D1954	8-719-049-09	DIODE 1SS367-T3SONY	
D1955	8-719-049-09	DIODE 1SS367-T3SONY	
D1956	8-719-421-27	DIODE MA728	
D1957	8-719-404-49	DIODE MA111	
D1958	8-719-049-09	DIODE 1SS367-T3SONY	
D2051	8-719-404-49	DIODE MA111 (TR920E/TR930)	
D2052	8-719-404-49	DIODE MA111 (TR920E/TR930)	
		< FERRITE BEAD >	
FB251	1-414-228-11	INDUCTOR, FERRITE BEAD	
FB1151	1-500-284-21	INDUCTOR, FERRITE BEAD	
FB1601	1-414-228-11	INDUCTOR, FERRITE BEAD (TR930)	
FB1602	1-414-228-11	INDUCTOR, FERRITE BEAD	
FB1603	1-500-284-21	INDUCTOR, FERRITE BEAD	
FB1604	1-500-284-21	INDUCTOR, FERRITE BEAD	
FB1605	1-500-284-21	INDUCTOR, FERRITE BEAD	
FB1701	1-414-228-11	INDUCTOR, FERRITE BEAD	
FB1702	1-414-228-11	INDUCTOR, FERRITE BEAD	
		< IC >	
IC101	8-752-071-15	IC CXA1702AR-T6	
IC102	8-759-447-79	IC MB87B121PFV-G-BND-ER	
IC103	8-759-438-69	IC MB40C218PFQ-G-BND-ER	
IC104	8-759-454-36	IC uPD6466GS-622-GLG-E2	
IC105	8-759-457-06	IC M65510FP-600D	
IC106	8-759-457-05	IC HG51D306TETL	
IC108	8-759-169-02	IC MB88344BPFV-G-BND-ER	
IC109	8-752-079-31	IC CXA1737R-T6	
IC114	8-752-386-05	IC CXD3119R-T6	
IC115	8-759-460-40	IC HG51D318TETL	
IC116	8-759-445-94	IC AK6480AM-E2	
IC117	8-752-879-54	IC CXP913040-001R-T6	
IC119	8-759-058-62	IC TC7S08FU(TE85R)	
IC120	8-759-356-30	IC XR1083ACQ-E2	
IC121	8-759-327-67	IC LB1950V-TLM	
IC122	8-759-327-61	IC LB8112V-TLM (TR930)	
IC122	8-759-327-62	IC TA8482FN-EL (TR820E/TR825E/TR920E)	
IC129	8-752-078-82	IC CXA2030R-T6	
IC130	8-759-058-58	IC TC7S04FU(TE85R)(TR920E/TR930)	
IC202	8-752-384-74	IC CXD2486R-T4	
IC203	8-759-462-43	IC AD9800JCSTRL	
IC251	8-759-075-97	IC LM358PW	
IC252	8-759-365-18	IC uPD16833G3-E2	
IC253	8-759-337-41	IC NJM2902V(TE2)	
IC255	8-752-377-38	IC CXD2430N	
IC800	8-752-384-33	IC CXD3121R (TR920E/TR930)	
IC1951	8-759-298-10	IC S-8423NFS-T2	
IC1952	8-759-454-37	IC S579201PZ-TEB	
IC1995	8-759-059-05	IC TL1596CPW	
		< COIL >	
L252	1-414-754-11	INDUCTOR 10uH	
L253	1-414-398-11	INDUCTOR 10uH	
L1002	1-414-406-11	INDUCTOR 220uH	
L1003	1-412-951-11	INDUCTOR 10uH	
L1004	1-414-406-11	INDUCTOR 220uH	
L1005	1-414-398-11	INDUCTOR 10uH	
L1006	1-412-948-11	INDUCTOR 5.6uH	
L1007	1-410-656-11	INDUCTOR CHIP 150uH	
L1008	1-412-963-11	INDUCTOR 100uH	
L1009	1-412-282-41	INDUCTOR 470uH	
L1010	1-412-957-11	INDUCTOR 33uH	
L1011	1-412-280-31	INDUCTOR 330uH	
L1012	1-410-657-21	INDUCTOR CHIP 180uH	
L1013	1-410-656-11	INDUCTOR CHIP 150uH	
L1014	1-412-956-21	INDUCTOR 27uH	
L1015	1-412-280-31	INDUCTOR 330uH	
L1017	1-412-949-21	INDUCTOR 6.8uH	
L1018	1-412-951-11	INDUCTOR 10uH	
L1019	1-412-944-11	INDUCTOR 2.7uH	
L1020	1-414-754-11	INDUCTOR 10uH	
L1141	1-414-754-11	INDUCTOR 10uH	
L1151	1-414-754-11	INDUCTOR 10uH	
L1154	1-414-754-11	INDUCTOR 10uH	
L1201	1-414-754-11	INDUCTOR 10uH	
L1202	1-414-754-11	INDUCTOR 10uH	
L1203	1-414-754-11	INDUCTOR 10uH	
L1204	1-412-945-11	INDUCTOR 3.3uH	
L1206	1-414-754-11	INDUCTOR 10uH	
L1207	1-414-078-11	INDUCTOR 10uH	
L1209	1-414-754-11	INDUCTOR 10uH	
L1220	1-412-955-11	INDUCTOR 22uH	
L1301	1-414-754-11	INDUCTOR 10uH	
L1303	1-412-939-11	INDUCTOR 1uH (TR930)	
L1303	1-412-937-11	INDUCTOR 0.68uH (TR920E)	
L1305	1-414-754-11	INDUCTOR 10uH	
L1306	1-414-754-11	INDUCTOR 10uH	

Ref. No.	Part No.	Description	Remark
L1307	1-414-754-11	INDUCTOR 10uH	
L1308	1-412-959-11	INDUCTOR 47uH	(TR920E/TR930)
L1310	1-414-754-11	INDUCTOR 10uH	
L1603	1-414-398-11	INDUCTOR 10uH	
L1604	1-412-955-11	INDUCTOR 22uH	
L1751	1-414-754-11	INDUCTOR 10uH	
L1752	1-414-754-11	INDUCTOR 10uH	
L1753	1-414-754-11	INDUCTOR 10uH	
L1754	1-412-961-11	INDUCTOR 68uH	
L1870	1-414-396-21	INDUCTOR 4.7uH	
L1951	1-414-754-11	INDUCTOR 10uH	
L2051	1-414-754-11	INDUCTOR 10uH	(TR920E/TR930)
		< TRANSISTOR >	
Q251	8-729-425-64	TRANSISTOR 2SD2216Q	
Q252	8-729-425-64	TRANSISTOR 2SD2216Q	
Q253	8-729-425-50	TRANSISTOR 2SB1462Q	
Q1001	8-729-031-69	TRANSISTOR 2SA1965-TL	
Q1002	8-729-425-50	TRANSISTOR 2SB1462Q	
Q1003	8-729-425-50	TRANSISTOR 2SB1462Q	
Q1004	8-729-031-69	TRANSISTOR 2SA1965-TL	(TR930)
Q1005	8-729-031-69	TRANSISTOR 2SA1965-TL	(TR930)
Q1006	8-729-031-69	TRANSISTOR 2SA1965-TL	(TR930)
Q1007	8-729-031-69	TRANSISTOR 2SA1965-TL	(TR930)
Q1008	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1009	8-729-429-18	TRANSISTOR UN9213	(TR930)
Q1010	8-729-429-18	TRANSISTOR UN9213	(TR930)
Q1011	8-729-429-18	TRANSISTOR UN9213	(TR930)
Q1012	8-729-429-18	TRANSISTOR UN9213	(TR930)
Q1013	8-729-429-18	TRANSISTOR UN9213	
Q1014	8-729-429-18	TRANSISTOR UN9213	(TR825E)
Q1015	8-729-429-18	TRANSISTOR UN9213	
Q1016	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1018	8-729-429-18	TRANSISTOR UN9213	(TR820E/TR825E/TR920E)
Q1025	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1026	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1028	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1029	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1030	8-729-037-89	TRANSISTOR 2SC4627J-C(TX).SO	
Q1033	8-729-425-50	TRANSISTOR 2SB1462Q	
Q1034	8-729-425-50	TRANSISTOR 2SB1462Q	
Q1036	8-729-425-50	TRANSISTOR 2SB1462Q	
Q1037	8-729-037-89	TRANSISTOR 2SC4627J-C(TX).SO	
Q1038	8-729-429-18	TRANSISTOR UN9213	
Q1039	8-729-429-18	TRANSISTOR UN9213	(TR930)
Q1040	8-729-429-18	TRANSISTOR UN9213	
Q1041	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1043	8-729-807-86	TRANSISTOR 2SB1295-UL5	
Q1044	8-729-429-18	TRANSISTOR UN9213	
Q1045	8-729-429-18	TRANSISTOR UN9213	
Q1100	8-729-031-69	TRANSISTOR 2SA1965-TL	(TR930)
Q1135	8-729-037-89	TRANSISTOR 2SC4627J-C(TX).SO	
Q1136	8-729-429-18	TRANSISTOR UN9213	
Q1138	8-729-429-18	TRANSISTOR UN9213	(TR825E)
Q1139	8-729-031-69	TRANSISTOR 2SA1965-TL	
Q1140	8-729-429-18	TRANSISTOR UN9213	
Q1141	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1150	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1201	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1202	8-729-425-50	TRANSISTOR 2SB1462Q	
Q1203	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1220	8-729-429-18	TRANSISTOR UN9213	
Q1221	8-729-429-18	TRANSISTOR UN9213	(TR920E/TR930)
Q1305	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1350	8-729-428-88	TRANSISTOR UN9113	
Q1351	8-729-425-64	TRANSISTOR 2SD2216Q	(TR930)
Q1352	8-729-015-66	TRANSISTOR 2SC4919	
Q1353	8-729-425-64	TRANSISTOR 2SD2216Q	(TR930)
Q1354	8-729-015-66	TRANSISTOR 2SC4919	
Q1355	8-729-015-66	TRANSISTOR 2SC4919	
Q1356	8-729-425-50	TRANSISTOR 2SB1462Q	(TR930)
Q1357	8-729-425-50	TRANSISTOR 2SB1462Q	(TR930)
Q1486	8-729-013-60	TRANSISTOR RN1110-TE85L	
Q1487	8-729-013-60	TRANSISTOR RN1110-TE85L	
Q1488	8-729-013-84	TRANSISTOR RN2111-TE85L	
Q1489	8-729-013-60	TRANSISTOR RN1110-TE85L	
Q1490	8-729-013-60	TRANSISTOR RN1110-TE85L	
Q1491	8-729-429-50	TRANSISTOR XP4312	
Q1492	8-729-429-50	TRANSISTOR XP4312	
Q1493	8-729-428-88	TRANSISTOR UN9113	
Q1494	8-729-429-18	TRANSISTOR UN9213	
Q1601	8-729-429-18	TRANSISTOR UN9213	
Q1602	8-729-428-88	TRANSISTOR UN9113	
Q1603	8-729-428-88	TRANSISTOR UN9113	
Q1604	8-729-429-18	TRANSISTOR UN9213	
Q1605	8-729-425-50	TRANSISTOR 2SB1462Q	
Q1751	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1851	8-729-425-50	TRANSISTOR 2SB1462Q	
Q1852	8-729-425-50	TRANSISTOR 2SB1462Q	
Q1854	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1951	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1952	8-729-040-77	TRANSISTOR 2SC5376-B(TE85L)	
Q1953	8-729-425-64	TRANSISTOR 2SD2216Q	
Q1954	8-729-032-00	TRANSISTOR 2SJ381-TD	
Q1955	8-729-037-72	TRANSISTOR UN9211J-(TX).SO	
Q1956	8-729-425-50	TRANSISTOR 2SB1462Q	
Q1958	8-729-037-72	TRANSISTOR UN9211J-(TX).SO	(TR820E/TR825E)
Q1959	8-729-032-62	TRANSISTOR 2SJ347-TE85L	
Q1963	8-729-024-48	TRANSISTOR 2SK1830-TE85L	
Q2051	8-729-425-50	TRANSISTOR 2SB1462Q	(TR920E/TR930)
Q2052	8-729-425-50	TRANSISTOR 2SB1462Q	(TR920E/TR930)
Q2053	8-729-425-50	TRANSISTOR 2SB1462Q	(TR920E/TR930)
		< RESISTOR >	
R251	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R252	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R253	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R254	1-216-001-00	METAL CHIP 10 5% 1/10W	
R255	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R256	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R257	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R258	1-216-845-11	METAL CHIP 100K 5% 1/16W	

Ref. No.	Part No.	Description			Remark
R259	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R260	1-216-835-11	METAL CHIP	15K	5%	1/16W
R261	1-216-815-11	METAL CHIP	330	5%	1/16W
R262	1-216-837-11	METAL CHIP	22K	5%	1/16W
R263	1-216-848-11	METAL CHIP	180K	5%	1/16W
R264	1-216-848-11	METAL CHIP	180K	5%	1/16W
R265	1-216-836-11	METAL CHIP	18K	5%	1/16W
R266	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R267	1-216-821-11	METAL CHIP	1K	5%	1/16W
R269	1-216-841-11	METAL CHIP	47K	5%	1/16W
R270	1-216-843-11	METAL CHIP	68K	5%	1/16W
R271	1-216-845-11	METAL CHIP	100K	5%	1/16W
R272	1-216-848-11	METAL CHIP	180K	5%	1/16W
R273	1-216-843-11	METAL CHIP	68K	5%	1/16W
R275	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R294	1-216-864-11	METAL CHIP	0	5%	1/16W
R300	1-216-864-11	METAL CHIP	0	5%	1/16W
R302	1-216-864-11	METAL CHIP	0	5%	1/16W
R303	1-216-864-11	METAL CHIP	0	5%	1/16W
R705	1-216-843-11	METAL CHIP	68K	5%	1/16W (TR930)
R705	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR825/TR920E)
R706	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR825E)
R706	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR920E)
R706	1-216-842-11	METAL CHIP	56K	5%	1/16W (TR930)
R706	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E)
R1001	1-216-818-11	METAL CHIP	560	5%	1/16W
R1002	1-216-804-11	METAL CHIP	39	5%	1/16W (TR930)
R1002	1-216-803-11	METAL GLAZE	33	5%	1/16W (TR820E/TR825E/TR920E)
R1003	1-216-807-11	METAL CHIP	68	5%	1/16W
R1004	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1005	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1006	1-216-813-11	METAL CHIP	220	5%	1/16W
R1007	1-216-814-11	METAL CHIP	270	5%	1/16W
R1008	1-216-828-11	METAL CHIP	3.9K	5%	1/16W (TR930)
R1009	1-216-839-11	METAL CHIP	33K	5%	1/16W
R1010	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1011	1-216-828-11	METAL CHIP	3.9K	5%	1/16W (TR930)
R1012	1-216-828-11	METAL CHIP	3.9K	5%	1/16W (TR930)
R1013	1-216-828-11	METAL CHIP	3.9K	5%	1/16W (TR930)
R1014	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1015	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1016	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)
R1017	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)
R1018	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)
R1019	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)
R1020	1-216-838-11	METAL CHIP	27K	5%	1/16W
R1022	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R1023	1-216-817-11	METAL CHIP	470	5%	1/16W
R1024	1-216-817-11	METAL CHIP	470	5%	1/16W
R1025	1-216-838-11	METAL CHIP	27K	5%	1/16W
R1027	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R1028	1-216-838-11	METAL CHIP	27K	5%	1/16W
R1030	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R1031	1-216-838-11	METAL CHIP	27K	5%	1/16W
R1033	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R1034	1-216-817-11	METAL CHIP	470	5%	1/16W
R1035	1-216-817-11	METAL CHIP	470	5%	1/16W
R1037	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1038	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1039	1-216-797-11	METAL CHIP	10	5%	1/16W
R1040	1-218-875-11	METAL GLAZE	15K	0.50%	1/16W
R1041	1-216-836-11	METAL CHIP	18K	5%	1/16W
R1042	1-216-864-11	METAL CHIP	0	5%	1/16W
R1044	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR920E/TR930)
R1045	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R1046	1-216-864-11	METAL CHIP	0	5%	1/16W
R1048	1-216-832-11	METAL CHIP	8.2K	5%	1/16W (TR820E/TR825E/TR920E)
R1051	1-216-835-11	METAL CHIP	15K	5%	1/16W (TR820E/TR825E/TR920E)
R1051	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR930)
R1052	1-216-864-11	METAL CHIP	0	5%	1/16W (TR930)
R1053	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E/TR920E)
R1054	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1057	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)
R1057	1-216-830-11	METAL CHIP	5.6K	5%	1/16W (TR820E/TR825E/TR920E)
R1061	1-216-855-11	METAL CHIP	680K	5%	1/16W
R1062	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1076	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1081	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1082	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1083	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1084	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1085	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1086	1-216-818-11	METAL CHIP	560	5%	1/16W
R1087	1-216-823-11	METAL CHIP	1.5K	5%	1/16W (TR820E/TR825E/TR920E)
R1087	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR930)
R1088	1-216-817-11	METAL CHIP	470	5%	1/16W
R1089	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1090	1-216-864-11	METAL CHIP	0	5%	1/16W
R1097	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1098	1-216-864-11	METAL CHIP	0	5%	1/16W
R1100	1-216-816-11	METAL CHIP	390	5%	1/16W
R1101	1-216-820-11	METAL CHIP	820	5%	1/16W

Ref. No.	Part No.	Description			Remark
R1103	1-216-815-11	METAL CHIP	330	5%	1/16W (TR930)
R1103	1-216-817-11	METAL CHIP	470	5%	1/16W (TR820E/TR825E/TR920E)
R1104	1-216-815-11	METAL CHIP	330	5%	1/16W (TR930)
R1104	1-216-817-11	METAL CHIP	470	5%	1/16W (TR820E/TR825E/TR920E)
R1105	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1106	1-216-816-11	METAL CHIP	390	5%	1/16W
R1107	1-216-817-11	METAL CHIP	470	5%	1/16W
R1110	1-216-805-11	METAL CHIP	47	5%	1/16W
R1111	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R1112	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1114	1-216-815-11	METAL CHIP	330	5%	1/16W
R1115	1-216-817-11	METAL CHIP	470	5%	1/16W
R1116	1-216-815-11	METAL CHIP	330	5%	1/16W (TR820E/TR825E/TR920E)
R1116	1-216-818-11	METAL CHIP	560	5%	1/16W (TR930)
R1117	1-216-815-11	METAL CHIP	330	5%	1/16W (TR930)
R1117	1-216-816-11	METAL CHIP	390	5%	1/16W (TR820E/TR825E/TR920E)
R1118	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1119	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1120	1-216-817-11	METAL CHIP	470	5%	1/16W
R1121	1-216-817-11	METAL CHIP	470	5%	1/16W
R1122	1-216-839-11	METAL CHIP	33K	5%	1/16W
R1123	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1124	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1125	1-216-815-11	METAL CHIP	330	5%	1/16W
R1128	1-216-811-11	METAL CHIP	150	5%	1/16W (TR930)
R1129	1-216-809-11	METAL CHIP	100	5%	1/16W
R1131	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R1134	1-216-823-11	METAL CHIP	1.5K	5%	1/16W (TR930)
R1134	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR820E/TR825E/TR920E)
R1135	1-216-814-11	METAL CHIP	270	5%	1/16W (TR930)
R1135	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E/TR920E)
R1136	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1137	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1138	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1142	1-216-820-11	METAL CHIP	820	5%	1/16W (TR820E/TR825E/TR920E)
R1142	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR930)
R1143	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R1144	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1146	1-216-818-11	METAL CHIP	560	5%	1/16W
R1147	1-216-820-11	METAL CHIP	820	5%	1/16W (TR930)
R1147	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E/TR920E)
R1148	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1149	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1150	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1151	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1152	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1153	1-216-816-11	METAL CHIP	390	5%	1/16W
R1154	1-216-834-11	METAL CHIP	12K	5%	1/16W
R1155	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R1156	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1157	1-216-808-11	METAL CHIP	82	5%	1/16W
R1158	1-216-864-11	METAL CHIP	0	5%	1/16W
R1161	1-216-864-11	METAL CHIP	0	5%	1/16W
R1162	1-216-834-11	METAL CHIP	12K	5%	1/16W
R1163	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R1164	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR930)
R1165	1-216-809-11	METAL CHIP	100	5%	1/16W
R1213	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R1215	1-216-809-11	METAL CHIP	100	5%	1/16W
R1216	1-216-835-11	METAL CHIP	15K	5%	1/16W
R1217	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R1218	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1219	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R1221	1-216-818-11	METAL CHIP	560	5%	1/16W
R1222	1-216-820-11	METAL CHIP	820	5%	1/16W
R1223	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1225	1-216-819-11	METAL CHIP	680	5%	1/16W
R1227	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1228	1-216-835-11	METAL CHIP	15K	5%	1/16W
R1230	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1231	1-216-857-11	METAL CHIP	1M	5%	1/16W
R1232	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1233	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1234	1-216-840-11	METAL CHIP	39K	5%	1/16W
R1236	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1237	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R1238	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1239	1-216-864-11	METAL CHIP	0	5%	1/16W
R1240	1-216-809-11	METAL CHIP	100	5%	1/16W (TR920E/TR930)
R1240	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR820E/TR825E)
R1241	1-216-809-11	METAL CHIP	100	5%	1/16W (TR920E/TR930)
R1241	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR820E/TR825E)
R1242	1-216-809-11	METAL CHIP	100	5%	1/16W (TR920E/TR930)
R1242	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR820E/TR825E)
R1246	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1247	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1248	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1249	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1250	1-216-864-11	METAL CHIP	0	5%	1/16W
R1251	1-216-818-11	METAL CHIP	560	5%	1/16W
R1252	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1253	1-216-818-11	METAL CHIP	560	5%	1/16W
R1254	1-216-830-11	METAL CHIP	5.6K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R1255	1-216-817-11	METAL CHIP	470	5%	1/16W
R1256	1-216-816-11	METAL CHIP	390	5%	1/16W
R1280	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1281	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1283	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR920E/TR930)
R1283	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E)
R1284	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR920E/TR930)
R1285	1-216-857-11	METAL CHIP	1M	5%	1/16W (TR920E/TR930)
R1285	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E)
R1287	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR920E/TR930)
R1289	1-216-864-11	METAL CHIP	0	5%	1/16W
R1290	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1292	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1293	1-216-864-11	METAL CHIP	0	5%	1/16W
R1295	1-216-817-11	METAL CHIP	470	5%	1/16W
R1297	1-216-864-11	METAL CHIP	0	5%	1/16W
R1298	1-216-864-11	METAL CHIP	0	5%	1/16W
R1307	1-216-836-11	METAL CHIP	18K	5%	1/16W (TR820E/TR825E/TR920E)
R1307	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR930)
R1308	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR920E/TR930)
R1312	1-216-834-11	METAL CHIP	12K	5%	1/16W
R1313	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1314	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1315	1-216-815-11	METAL CHIP	330	5%	1/16W
R1316	1-216-815-11	METAL CHIP	330	5%	1/16W
R1321	1-218-876-11	METAL GLAZE	16K	0.50%	1/16W
R1322	1-218-847-11	METAL GLAZE	1K	0.50%	1/16W
R1323	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R1324	1-216-834-11	METAL CHIP	12K	5%	1/16W
R1330	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1331	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R1332	1-216-864-11	METAL CHIP	0	5%	1/16W (TR920E)
R1350	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR930)
R1351	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R1352	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1353	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR930)
R1354	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR930)
R1355	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1356	1-216-847-11	METAL CHIP	150K	5%	1/16W (TR930)
R1357	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R1358	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR930)
R1360	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR930)

Ref. No.	Part No.	Description			Remark
R1361	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR930)
R1362	1-216-804-11	METAL CHIP	39	5%	1/16W
R1363	1-216-803-11	METAL CHIP	33	5%	1/16W
R1364	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R1365	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R1366	1-216-803-11	METAL CHIP	33	5%	1/16W
R1367	1-216-804-11	METAL CHIP	39	5%	1/16W
R1368	1-216-803-11	METAL CHIP	33	5%	1/16W
R1369	1-216-804-11	METAL CHIP	39	5%	1/16W
R1370	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E)
R1374	1-216-864-11	METAL CHIP	0	5%	1/16W (TR920E/TR930)
R1377	1-216-864-11	METAL CHIP	0	5%	1/16W (TR920E/TR930)
R1380	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E)
R1381	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR820E/TR825E)
R1383	1-216-832-11	METAL CHIP	8.2K	5%	1/16W (TR820E/TR825E)
R1390	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1391	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1403	1-216-844-11	METAL CHIP	82K	5%	1/16W
R1404	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1406	1-216-844-11	METAL CHIP	82K	5%	1/16W
R1408	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1409	1-216-820-11	METAL CHIP	820	5%	1/16W
R1410	1-216-864-11	METAL CHIP	0	5%	1/16W
R1418	1-216-844-11	METAL CHIP	82K	5%	1/16W
R1419	1-216-864-11	METAL CHIP	0	5%	1/16W
R1421	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R1422	1-216-854-11	METAL CHIP	560K	5%	1/16W
R1423	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1424	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1425	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1426	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R1461	1-216-864-11	METAL CHIP	0	5%	1/16W
R1462	1-216-864-11	METAL CHIP	0	5%	1/16W
R1476	1-216-864-11	METAL CHIP	0	5%	1/16W
R1486	1-216-810-11	METAL CHIP	120	5%	1/16W
R1487	1-216-810-11	METAL CHIP	120	5%	1/16W
R1488	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1489	1-216-817-11	METAL CHIP	470	5%	1/16W
R1490	1-216-817-11	METAL CHIP	470	5%	1/16W
R1491	1-216-817-11	METAL CHIP	470	5%	1/16W
R1492	1-216-817-11	METAL CHIP	470	5%	1/16W
R1601	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1603	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1616	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1620	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1621	1-216-798-11	METAL GLAZE	12	5%	1/16W
R1622	1-216-798-11	METAL GLAZE	12	5%	1/16W

Ref. No.	Part No.	Description			Remark
R1628	1-216-809-11	METAL CHIP	100	5%	1/16W
R1629	1-216-809-11	METAL CHIP	100	5%	1/16W
R1630	1-216-809-11	METAL CHIP	100	5%	1/16W
R1632	1-216-857-11	METAL CHIP	1M	5%	1/16W
R1636	1-216-864-11	METAL CHIP	0	5%	1/16W
R1638	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1639	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1642	1-216-864-11	METAL CHIP	0	5%	1/16W (TR820E/TR825E/TR920E)
R1701	1-216-864-11	METAL CHIP	0	5%	1/16W
R1702	1-216-864-11	METAL CHIP	0	5%	1/16W
R1703	1-216-864-11	METAL CHIP	0	5%	1/16W
R1704	1-216-864-11	METAL CHIP	0	5%	1/16W
R1705	1-216-864-11	METAL CHIP	0	5%	1/16W
R1706	1-216-864-11	METAL CHIP	0	5%	1/16W
R1707	1-216-864-11	METAL CHIP	0	5%	1/16W
R1708	1-216-864-11	METAL CHIP	0	5%	1/16W
R1709	1-216-864-11	METAL CHIP	0	5%	1/16W
R1710	1-216-864-11	METAL CHIP	0	5%	1/16W
R1711	1-216-864-11	METAL CHIP	0	5%	1/16W
R1712	1-216-864-11	METAL CHIP	0	5%	1/16W
R1713	1-216-864-11	METAL CHIP	0	5%	1/16W
R1714	1-216-864-11	METAL CHIP	0	5%	1/16W
R1715	1-216-864-11	METAL CHIP	0	5%	1/16W
R1732	1-216-864-11	METAL CHIP	0	5%	1/16W
R1751	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1752	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1755	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1756	1-216-840-11	METAL CHIP	39K	5%	1/16W
R1757	1-216-840-11	METAL CHIP	39K	5%	1/16W
R1762	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1763	1-216-864-11	METAL CHIP	0	5%	1/16W
R1772	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1773	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1774	1-218-847-11	METAL GLAZE	1K	0.50%	1/16W
R1775	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1776	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1778	1-216-864-11	METAL CHIP	0	5%	1/16W
R1779	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1780	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1781	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1782	1-216-864-11	METAL CHIP	0	5%	1/16W
R1783	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1784	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1785	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1786	1-216-864-11	METAL CHIP	0	5%	1/16W
R1787	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1790	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1792	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1793	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1794	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1795	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1796	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1798	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1801	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1803	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR930)

Ref. No.	Part No.	Description			Remark
R1803	1-216-832-11	METAL CHIP	8.2K	5%	1/16W (TR820E/TR825E/TR920E)
R1804	1-216-857-11	METAL CHIP	1M	5%	1/16W
R1805	1-216-856-11	METAL CHIP	820K	5%	1/16W
R1806	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1808	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1809	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1810	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1811	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1812	1-216-839-11	METAL CHIP	33K	5%	1/16W
R1813	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1814	1-216-864-11	METAL CHIP	0	5%	1/16W
R1815	1-216-864-11	METAL CHIP	0	5%	1/16W
R1819	1-216-843-11	METAL CHIP	68K	5%	1/16W
R1820	1-216-843-11	METAL CHIP	68K	5%	1/16W
R1821	1-216-864-11	METAL CHIP	0	5%	1/16W
R1822	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1823	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1826	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1827	1-216-839-11	METAL CHIP	33K	5%	1/16W
R1836	1-216-864-11	METAL CHIP	0	5%	1/16W
R1851	1-217-671-11	METAL CHIP	1	5%	1/10W
R1852	1-217-671-11	METAL CHIP	1	5%	1/10W
R1853	1-217-671-11	METAL CHIP	1	5%	1/10W
R1855	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1856	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1857	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1859	1-216-864-11	METAL CHIP	0	5%	1/16W
R1860	1-216-864-11	METAL CHIP	0	5%	1/16W
R1861	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1862	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1863	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1865	1-216-851-11	METAL CHIP	330K	5%	1/16W
R1867	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1868	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1869	1-216-023-00	METAL CHIP	82	5%	1/10W
R1872	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1873	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1874	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1875	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1876	1-216-819-11	METAL CHIP	680	5%	1/16W (TR820E/TR825E/TR920E)
R1876	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R1877	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1878	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)
R1878	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR820E/TR825E/TR920E)
R1880	1-216-837-11	METAL CHIP	22K	5%	1/16W
R1881	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1882	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1883	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1884	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1887	1-216-830-11	METAL CHIP	5.6K	5%	1/16W (TR820E/TR825E/TR920E)
R1887	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR930)

Ref. No.	Part No.	Description			Remark
R1888	1-216-836-11	METAL CHIP	18K	5%	1/16W
R1889	1-217-671-11	METAL CHIP	1	5%	1/10W
R1890	1-217-671-11	METAL CHIP	1	5%	1/10W
R1891	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R1892	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1893	1-216-817-11	METAL CHIP	470	5%	1/16W
R1894	1-216-817-11	METAL CHIP	470	5%	1/16W
R1896	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1897	1-216-808-11	METAL CHIP	82	5%	1/16W
R1898	1-216-864-11	METAL CHIP	0	5%	1/16W
R1953	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1954	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1955	1-216-857-11	METAL CHIP	1M	5%	1/16W
R1956	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1957	1-216-813-11	METAL CHIP	220	5%	1/16W
R1958	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1961	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1962	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1963	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1964	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1965	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1966	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1967	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1969	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1970	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1971	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1972	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1973	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1976	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1977	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1979	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1980	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1982	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1986	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1991	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2001	1-216-821-11	METAL CHIP	1K	5%	1/16W
R2010	1-216-819-11	METAL CHIP	680	5%	1/16W (TR820E/TR825E)
R2011	1-216-841-11	METAL CHIP	47K	5%	1/16W
R2012	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2015	1-219-570-11	METAL GLAZE	10M	5%	1/16W
R2017	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2020	1-216-845-11	METAL CHIP	100K	5%	1/16W
R2021	1-216-849-11	METAL CHIP	220K	5%	1/16W
R2022	1-216-841-11	METAL CHIP	47K	5%	1/16W
R2023	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2024	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2026	1-216-845-11	METAL CHIP	100K	5%	1/16W
R2029	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2031	1-216-817-11	METAL CHIP	470	5%	1/16W
R2036	1-216-841-11	METAL CHIP	47K	5%	1/16W
R2037	1-216-841-11	METAL CHIP	47K	5%	1/16W
R2038	1-216-841-11	METAL CHIP	47K	5%	1/16W
R2044	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2046	1-216-845-11	METAL CHIP	100K	5%	1/16W
R2047	1-216-833-11	METAL CHIP	10K	5%	1/16W
R2048	1-216-853-11	METAL CHIP	470K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R2049	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R2051	1-216-835-11	METAL CHIP	15K	5%	1/16W (TR920E/TR930)
R2056	1-216-835-11	METAL CHIP	15K	5%	1/16W (TR920E/TR930)
R2058	1-216-835-11	METAL CHIP	15K	5%	1/16W (TR920E/TR930)
R2060	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR920E/TR930)
R2061	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR920E/TR930)
R2062	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR920E/TR930)
R2063	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR920E/TR930)
R2064	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR920E/TR930)
R2065	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR920E/TR930)
R2070	1-217-671-11	METAL CHIP	1	5%	1/10W (TR920E/TR930)
R2071	1-217-671-11	METAL CHIP	1	5%	1/10W (TR920E/TR930)
R2074	1-216-864-11	METAL CHIP	0	5%	1/16W (TR920E/TR930)
R2076	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR920E/TR930)
R2151	1-216-841-11	METAL CHIP	47K	5%	1/16W
R2152	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2154	1-216-853-11	METAL CHIP	470K	5%	1/16W
R2162	1-216-853-11	METAL CHIP	470K	5%	1/16W

< THERMISTOR >

TH1751	1-809-360-21	THERMISTOR, NTC (2125)

< VIBRATOR >

X1305	1-767-028-21	VIBRATOR, CRYSTAL (14.318MHz)(TR930)
X1305	1-767-029-21	VIBRATOR, CRYSTAL (17.734MHz)(TR920E)
X1601	1-760-320-11	VIBRATOR, CRYSTAL (28.636MHz)(TR930)
X1601	1-760-321-11	VIBRATOR, CRYSTAL (28.375MHz) (TR820E/TR825E/TR920E)
X1751	1-760-655-41	VIBRATOR, CRYSTAL (20MHz)
X1752	1-767-030-21	VIBRATOR, CRYSTAL (11.895MHz)(TR930)
X1752	1-767-031-21	VIBRATOR, CRYSTAL (11.719MHz) (TR820E/TR825E/TR920E)
X1951	1-760-458-21	VIBRATOR, CRYSTAL (0.032798MHz)
X1952	1-579-907-21	VIBRATOR, CERAMIC (20MHz)

A-7056-774-A VF-99 (HP) BOARD, COMPLETE
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(TR820E/TR825E)
(Ref. No. 1,000 Series)

< CAPACITOR >

C901	1-107-854-11	TANTAL. CHIP	68uF	20%	6.3V
C902	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C903	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C904	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C905	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V

Ref. No.	Part No.	Description			Remark
C906	1-162-638-11	CERAMIC CHIP	1uF		16V
C907	1-104-563-11	FILM CHIP	0.1uF	5%	16V
C908	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C909	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
⚠C910	1-164-758-11	CERAMIC CHIP	0.0039uF	5%	50V
⚠C911	1-164-715-11	CERAMIC CHIP	0.0068uF	5%	50V
C912	1-107-854-11	TANTAL. CHIP	68uF	20%	6.3V
C913	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C914	1-107-689-21	TANTAL. CHIP	1uF	20%	35V
C915	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C916	1-164-611-11	CERAMIC CHIP	0.001uF	10%	500V
		< CONNECTOR >			
CN901	1-573-506-41	CONNECTOR, FPC (NON ZIF) 4P			
CN902	1-580-057-11	PIN, CONNECTOR 4P			
		< DIODE >			
D901	8-719-951-21	DIODE PR1102W-TR			
D903	8-719-404-49	DIODE MA111			
		< IC >			
IC901	8-759-196-14	IC BA7149F-E2			
		< COIL >			
L901	1-412-031-11	INDUCTOR CHIP 47uH			
L902	1-410-387-11	INDUCTOR CHIP 33uH			
⚠L903	1-411-697-11	COIL, FERRITE (HLC)			
		< TRANSISTOR >			
Q901	8-729-230-63	TRANSISTOR 2SC4116-YG			
Q902	8-729-106-68	TRANSISTOR 2SD1615A-GP			
Q903	8-729-216-31	TRANSISTOR 2SA1163-G			
Q904	8-729-230-63	TRANSISTOR 2SC4116-YG			
		< RESISTOR >			
R901	1-216-817-11	METAL CHIP	470	5%	1/16W
R902	1-216-817-11	METAL CHIP	470	5%	1/16W
R903	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R904	1-216-833-11	METAL CHIP	10K	5%	1/16W
R905	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R906	1-216-813-11	METAL CHIP	220	5%	1/16W
R907	1-216-845-11	METAL CHIP	100K	5%	1/16W
R908	1-216-852-11	METAL CHIP	390K	5%	1/16W
R909	1-216-833-11	METAL CHIP	10K	5%	1/16W
R910	1-216-835-11	METAL CHIP	15K	5%	1/16W
R911	1-216-160-00	METAL GLAZE	27	5%	1/8W
R912	1-216-857-11	METAL CHIP	1M	5%	1/16W
R913	1-216-820-11	METAL CHIP	820	5%	1/16W
R914	1-216-813-11	METAL CHIP	220	5%	1/16W
R915	1-216-793-11	METAL GLAZE	4.7	5%	1/16W
R916	1-218-881-11	METAL GLAZE	27K	0.50%	1/16W
R917	1-218-893-11	METAL GLAZE	82K	0.50%	1/16W
R918	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R919	1-216-839-11	METAL CHIP	33K	5%	1/16W
R920	1-216-837-11	METAL CHIP	22K	5%	1/16W
R921	1-216-795-11	METAL GLAZE	6.8	5%	1/16W
R922	1-216-847-11	METAL CHIP	150K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R923	1-216-857-11	METAL CHIP	1M	5%	1/16W
R924	1-216-862-11	METAL GLAZE	2.7M	5%	1/16W
R925	1-216-862-11	METAL GLAZE	2.7M	5%	1/16W
R926	1-216-821-11	METAL CHIP	1K	5%	1/16W
R927	1-216-821-11	METAL CHIP	1K	5%	1/16W
R928	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R929	1-216-818-11	METAL CHIP	560	5%	1/16W
		< VARIABLE RESISTOR >			
RV903	1-238-852-11	RES, ADJ, CERMET 470			
RV904	1-223-566-11	RES, ADJ, METAL GLAZE 1M			
		< TRANSFORMER >			
⚠T901	1-453-124-11	TRANSFORMER ASSY, FLYBACK			
		< THERMISTOR >			
TH901	1-809-350-21	THERMISTOR, NTC (2125)			
		< FLEXIBLE BOARD >			
⚠W901	1-540-019-21	SOCKET ASSY, CRT			

A-7073-094-A VF-111 BOARD, COMPLETE (TR930)
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A-7073-119-A VF-111P BOARD, COMPLETE (TR920E)
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(Ref. No. 5,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C851	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C852	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C853	1-104-916-11	TANTAL. CHIP	6.8uF	20%	20V
C854	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C855	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C856	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C857	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V
C858	1-104-912-11	TANTAL. CHIP	3.3uF	20%	6.3V
C859	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C860	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C865	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C867	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C868	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C869	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C870	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C871	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C873	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C874	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C878	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C880	1-165-128-11	CERAMIC CHIP	0.22uF		16V (TR920E)
C881	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		< CONNECTOR >			
CN851	1-766-350-21	CONNECTOR, FFC/FPC 20P			
CN852	1-573-366-21	CONNECTOR, FFC/FPC 26P			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
CN853	1-573-305-11	CONNECTOR, BOARD TO BOARD 10P			

< DIODE >

Ref. No.	Part No.	Description			Remark
D852	8-719-043-70	DIODE MA6S121-(TX)			
D853	8-719-802-36	DIODE 1SS250			

< IC >

Ref. No.	Part No.	Description			Remark
IC851	8-759-097-75	IC MB3789PFV-G-BND-ER			
IC852	8-759-337-40	IC NJM2904V(TE2)			
IC853	8-759-337-40	IC NJM2904V(TE2)			
IC854	8-759-338-95	IC NJM2903V(TE2)			

< COIL >

Ref. No.	Part No.	Description			Remark
L853	1-412-033-11	INDUCTOR CHIP	220uH		
L854	1-414-754-11	INDUCTOR	10uH		

< TRANSISTOR >

Ref. No.	Part No.	Description			Remark
Q851	8-729-822-05	TRANSISTOR	2SD1622-ST-TD		
Q853	8-729-028-81	TRANSISTOR	DTA123JUA-T106		
Q870	8-729-037-52	TRANSISTOR	2SD2216J-QR(TX).SO		
Q871	8-729-037-52	TRANSISTOR	2SD2216J-QR(TX).SO		

< RESISTOR >

Ref. No.	Part No.	Description			Remark
R832	1-216-797-11	METAL CHIP	10	5%	1/16W
R836	1-216-809-11	METAL CHIP	100	5%	1/16W
R840	1-216-853-11	METAL CHIP	470K	5%	1/16W
R841	1-216-845-11	METAL CHIP	100K	5%	1/16W
R842	1-216-845-11	METAL CHIP	100K	5%	1/16W
R843	1-216-849-11	METAL CHIP	220K	5%	1/16W
R844	1-216-150-91	METAL GLAZE	10	5%	1/8W
R846	1-216-849-11	METAL CHIP	220K	5%	1/16W
R849	1-216-837-11	METAL CHIP	22K	5%	1/16W
R850	1-216-833-11	METAL CHIP	10K	5%	1/16W
R852	1-216-841-11	METAL CHIP	47K	5%	1/16W
R853	1-218-899-11	METAL GLAZE	150K	0.50%	1/16W
R854	1-218-901-11	METAL GLAZE	180K	0.50%	1/16W
R855	1-216-841-11	METAL CHIP	47K	5%	1/16W
R856	1-218-899-11	METAL GLAZE	150K	0.50%	1/16W
R857	1-218-903-11	METAL GLAZE	220K	0.50%	1/16W
R858	1-216-842-11	METAL CHIP	56K	5%	1/16W
R859	1-216-848-11	METAL CHIP	180K	5%	1/16W
R860	1-216-841-11	METAL CHIP	47K	5%	1/16W
R861	1-216-843-11	METAL CHIP	68K	5%	1/16W
R862	1-216-838-11	METAL CHIP	27K	5%	1/16W
R863	1-216-847-11	METAL CHIP	150K	5%	1/16W
R864	1-216-841-11	METAL CHIP	47K	5%	1/16W
R865	1-216-842-11	METAL CHIP	56K	5%	1/16W
R867	1-216-850-11	METAL CHIP	270K	5%	1/16W
R868	1-216-864-11	METAL CHIP	0	5%	1/16W
R869	1-216-843-11	METAL CHIP	68K	5%	1/16W
R870	1-216-842-11	METAL CHIP	56K	5%	1/16W
R871	1-216-850-11	METAL CHIP	270K	5%	1/16W
R872	1-216-833-11	METAL CHIP	10K	5%	1/16W
R873	1-216-851-11	METAL CHIP	330K	5%	1/16W
R874	1-216-845-11	METAL CHIP	100K	5%	1/16W
R875	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R879	1-216-837-11	METAL CHIP	22K	5%	1/16W
R880	1-216-845-11	METAL CHIP	100K	5%	1/16W
R881	1-216-853-11	METAL CHIP	470K	5%	1/16W
R882	1-216-845-11	METAL CHIP	100K	5%	1/16W
R884	1-216-838-11	METAL CHIP	27K	5%	1/16W
R885	1-216-837-11	METAL CHIP	22K	5%	1/16W
R886	1-216-841-11	METAL CHIP	47K	5%	1/16W
R887	1-216-841-11	METAL CHIP	47K	5%	1/16W
R888	1-216-841-11	METAL CHIP	47K	5%	1/16W
R891	1-216-296-91	CONDUCTOR, CHIP (3216)			
R892	1-216-168-00	METAL GLAZE	56	5%	1/8W

A-7073-095-A VF-112 BOARD, COMPLETE (TR930)
****

A-7073-120-A VF-112P BOARD, COMPLETE (TR920E)
****

(Ref. No. 5,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C901	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C902	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C903	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C905	1-162-638-11	CERAMIC CHIP	1uF		16V (TR930)
C905	1-164-505-11	CERAMIC CHIP	2.2uF		16V (TR920E)
C907	1-162-638-11	CERAMIC CHIP	1uF		16V (TR930)
C907	1-164-505-11	CERAMIC CHIP	2.2uF		16V (TR920E)
C908	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C909	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C910	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C911	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C912	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C913	1-162-638-11	CERAMIC CHIP	1uF		16V (TR930)
C913	1-164-505-11	CERAMIC CHIP	2.2uF		16V (TR920E)
C914	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C916	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C917	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C918	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C919	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C920	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C921	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C922	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C924	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C925	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C927	1-107-688-11	TANTAL. CHIP	1.5uF	20%	20V
C929	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C930	1-135-179-21	TANTAL. CHIP	2.2uF	20%	16V
C931	1-216-864-11	METAL CHIP	0	5%	1/16W
C936	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C937	1-164-505-11	CERAMIC CHIP	2.2uF		16V (TR920E)
C938	1-164-505-11	CERAMIC CHIP	2.2uF		16V (TR920E)

Ref. No.	Part No.	Description	Remark
C939	1-164-505-11	CERAMIC CHIP 2.2uF	16V (TR920E)
C940	1-164-676-11	CERAMIC CHIP 2200PF 5%	16V
		< CONNECTOR >	
CN901	1-573-935-11	CONNECTOR, FFC/FPC (ZIF) 26P	
CN902	1-573-925-11	CONNECTOR, FFC/FPC (ZIF) 16P	
		< DIODE >	
D901	8-713-102-80	DIODE 1T369-01-T8A	
D902	8-719-060-95	DIODE CL-200IR-X-TSL-BC	
		< IC >	
IC901	8-759-427-85	IC MB88146APFV-G-BND-ER	
IC902	8-752-080-54	IC CXA1515AQ-T4	
IC904	8-752-377-97	IC CXD2411AR-T4	
		< COIL >	
L901	1-414-754-11	INDUCTOR 10uH	
L902	1-414-754-11	INDUCTOR 10uH	
L903	1-414-756-11	INDUCTOR 47uH	
L905	1-412-949-21	INDUCTOR 6.8uH	
		< TRANSISTOR >	
Q901	8-729-037-53	TRANSISTOR 2SB1462J-QR(TX).SO	
Q902	8-729-037-52	TRANSISTOR 2SD2216J-QR(TX).SO	
Q906	8-729-040-26	TRANSISTOR CPT-182S-C-TSL-CD	
		< RESISTOR >	
R901	1-216-852-11	METAL CHIP 390K 5%	1/16W
R902	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R904	1-216-852-11	METAL CHIP 390K 5%	1/16W
R905	1-216-852-11	METAL CHIP 390K 5%	1/16W
R906	1-216-837-11	METAL CHIP 22K 5%	1/16W
R907	1-216-839-11	METAL CHIP 33K 5%	1/16W
R908	1-216-837-11	METAL CHIP 22K 5%	1/16W
R909	1-216-838-11	METAL CHIP 27K 5%	1/16W
R911	1-216-839-11	METAL CHIP 33K 5%	1/16W
R912	1-216-839-11	METAL CHIP 33K 5%	1/16W
R913	1-216-839-11	METAL CHIP 33K 5%	1/16W
R914	1-216-839-11	METAL CHIP 33K 5%	1/16W
R915	1-216-833-11	METAL CHIP 10K 5%	1/16W
R917	1-216-821-11	METAL CHIP 1K 5%	1/16W
R921	1-218-905-11	METAL GLAZE 270K 0.50%	1/16W
R922	1-218-875-11	METAL GLAZE 15K 0.50%	1/16W
R923	1-216-849-11	METAL CHIP 220K 5%	1/16W
R924	1-216-837-11	METAL CHIP 22K 5%	1/16W
R934	1-216-839-11	METAL CHIP 33K 5%	1/16W
R935	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R936	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R937	1-216-840-11	METAL CHIP 39K 5%	1/16W
R938	1-216-845-11	METAL CHIP 100K 5%	1/16W
R939	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R940	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R941	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R942	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R943	1-216-839-11	METAL CHIP 33K 5%	1/16W

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS *************	
10	1-475-098-21	SWITCH BLOCK, CONTROL (SS-8100)	
13	1-475-099-71	SWITCH BLOCK, VTR CONTROL (FK)(TR930)	
13	1-475-099-81	SWITCH BLOCK, VTR CONTROL (FK)(TR920E)	
13	1-475-099-91	SWITCH BLOCK, VTR CONTROL (FK) (TR820E/TR825E)	
16	1-467-574-21	REMOTE COMMANDER (RMT-708) (TR820E/TR920E/TR930)	
18	8-917-593-90	REMOTE COMMANDER (RMT-717)(TR825E)	
20	1-500-227-11	BEAD FERRITE (TR825E)	
103	1-475-160-11	SWITCH BLOCK, CONTROL	
154	1-665-149-11	FP-530 FLEXIBLE BOARD (TR920E/TR930)	
158	1-660-301-11	FP-430 FLEXIBLE BOARD (TR930)	
158	1-665-807-11	FP-505 FLEXIBLE BOARD (TR920E)	
209	1-661-547-11	FP-490 FLEXIBLE BOARD (TR820E/TR825E)	
253	1-500-227-11	BEAD, FERRITE (TR820E/TR825E)	
256	1-665-148-11	FP-527 FLEXIBLE BOARD	
257	1-660-277-11	FP-377 FLEXIBLE BOARD	
259	1-500-226-31	BEAD, FERRITE (EXCEPT TR920E:E,JE)	
260	1-665-146-11	FP-516 FLEXIBLE BOARD	
261	1-665-145-11	FP-512 FLEXIBLE BOARD	
267	1-665-142-11	FP-500 FLEXIBLE BOARD	
269	1-660-280-11	FP-380 FLEXIBLE BOARD (TR825E)	
269	1-665-681-11	FP-524 FLEXIBLE BOARD (TR920E/TR930)	
270	1-774-867-21	CONNECTOR, EXTERNAL (HOT SHOE) 8P	
301	1-660-300-11	FP-426 FLEXIBLE BOARD	
305	1-547-787-41	FILTER BLOCK, OPTICAL	
307	8-848-710-01	LENS, ZOOM (VCL-4214VA)	
313	1-694-076-21	TERMINAL BOARD, BATTERY	
316	1-500-227-11	BEAD, FERRITE (EXCEPT TR920E:E,JE)	
351	8-848-710-01	LENS, ZOOM (VCL-4214VA)	
760	1-658-213-11	FP-355 FLEXIBLE BOARD	
762	1-657-786-11	FP-221 FLEXIBLE BOARD	
803	1-657-785-11	FP-248 FLEXIBLE BOARD	
817	1-657-784-11	FP-220 FLEXIBLE BOARD	
D001	8-719-988-42	DIODE GL453	
IC401	A-7030-615-A	CCD BLOCK ASSY (CCD IMAGER) (079 SERVICE)(TR930)	
IC401	A-7030-782-A	CCD BLOCK ASSY (CCD IMAGER) (211 SERVICE)(TR820E/TR825E/TR920E)	
J001	1-565-276-21	JACK, ULTRA SMALL 1P (LANC)	
J903	1-659-514-21	JACK (SMALL TYPE) 1P	
LCD902	8-753-016-10	LCX005BK-1/5 COMPLETE	
LCD903	1-801-697-11	DISPLAY PANEL, LIQUID CRYSTAL	
M901	A-7048-851-A	DRUM ASSY (DGH-0D5A-R) (TR820E/TR825E/TR920E)	
M901	A-7048-849-A	DRUM ASSY (DGH-0D4A-R)(TR930)	
M902	8-835-531-01	MOTOR, DC SCE-0601A (CAPSTAN)	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
M905	1-698-760-01	MOTOR, FOCUS STEPPING	
M906	1-698-759-01	MOTOR, ZOOM STEPPING	
MIC901	1-542-312-11	MICROPHONE (L-CH)	
MIC902	1-542-312-11	MICROPHONE (R-CH)	
⚠ND801	1-517-414-21	FLUORESCENT TUB (0.55 INCH)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Be sure to read "Note on the CCD Imager replacement" on page 4–8 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi8 MP, ME/MP, REC PROOF)	
S002	1-572-688-11	SWITCH, PUSH (1 KEY) (C.C.LOCK)	
S004	1-572-467-71	SWITCH, PUSH (1 KEY) (EJECT)	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	
SE451	1-810-725-71	SENSOR, ANGULAR VELOCITY (YAW)	
SE452	1-810-725-81	SENSOR, ANGULAR VELOCITY (PITCH)	
V901	1-452-673-31	CRT ASSY (M01KXX90WB)(TR820E/TR825E)	

ACCESSORIES & PACKING MATERIALS
****

	1-573-291-11	CONNECTOR, CONVERSION, 21 PIN (TR820E/TR825E)
	1-575-334-11	CORD, CONNECTION (A/V connecting cable (STEREO) 1.5m)
	3-859-496-11	MANUAL, INSTRUCTION (ENGLISH)(TR930)
	3-859-496-21	MANUAL, INSTRUCTION (FRENCH)(TR930:CND)
	3-859-496-31	MANUAL, INSTRUCTION (ENGLISH,RUSSIAN)(TR820E:EE,NE,RU,UK/TR825E)
	3-859-496-41	MANUAL, INSTRUCTION (GERMAN,ITALIAN)(TR820E:AEP/TR825E)
	3-859-496-51	MANUAL, INSTRUCTION (SWEDISH,PORTUGUESE)(TR825E)
	3-859-496-61	MANUAL, INSTRUCTION (FRENCH,DUTCH)(TR820E:AEP)
	3-859-496-71	MANUAL, INSTRUCTION (POLISH,SWEDISH)(TR820E:EE,NE,RU)
	3-859-522-11	MANUAL, INSTRUCTION (ENGLISH,RUUSSIAN) (TR920E:AUS,JE,E)
	3-859-522-21	MANUAL, INSTRUCTION (ARABIC,PORTUGUESE) (TR920E:E)
	3-859-522-31	MANUAL, INSTRUCTION (FRENCH,GERMAN) (TR920E:JE,E)
	3-859-522-51	MANUAL, INSTRUCTION (CHINESE) (TR920E:JE,E)
	3-947-969-21	BELT (S), SHOULDER
	3-970-781-01	CASE (L), BATTERY
	3-971-463-01	LABEL, FIRE CAUTION DISCERN (TR930:US)
*	3-975-895-01	INDIVIDUAL CARTON (TR820E:AEP2)
*	3-975-895-11	INDIVIDUAL CARTON (TR820E:AEP1,EE,NE,RU/TR825E)
*	3-975-980-01	INDIVIDUAL CARTON (TR930)
*	3-975-981-01	CUSHION (LOWER)
*	3-975-982-01	CUSHION, ACC
⚠	A-7009-233-A	AC POWER ADAPTOR (AC-V316)(TR930)
⚠	A-7009-234-A	AC POWER ADAPTOR (AC-V316)(TR920E:E,JE)
⚠	A-7009-237-A	AC POWER ADAPTOR (AC-V316)(TR920E:AUS)
⚠	A-7009-749-A	AC POWER ADAPTOR (AC-V326) (TR820E:AEP,EE,NE,RU/TR825E)
⚠	A-7009-750-A	AC POWER ADAPTOR (AC-V326) (TR820E:UK)
	A-7092-699-A	CASE (L) ASSY, BATTERY (TR820E/TR825E/TR930:CND)
	A-7092-936-A	CASE (L) ASSY (U), BATTERY (R930:US)
**	NP-F530	BATTERY PACK

NOTE.

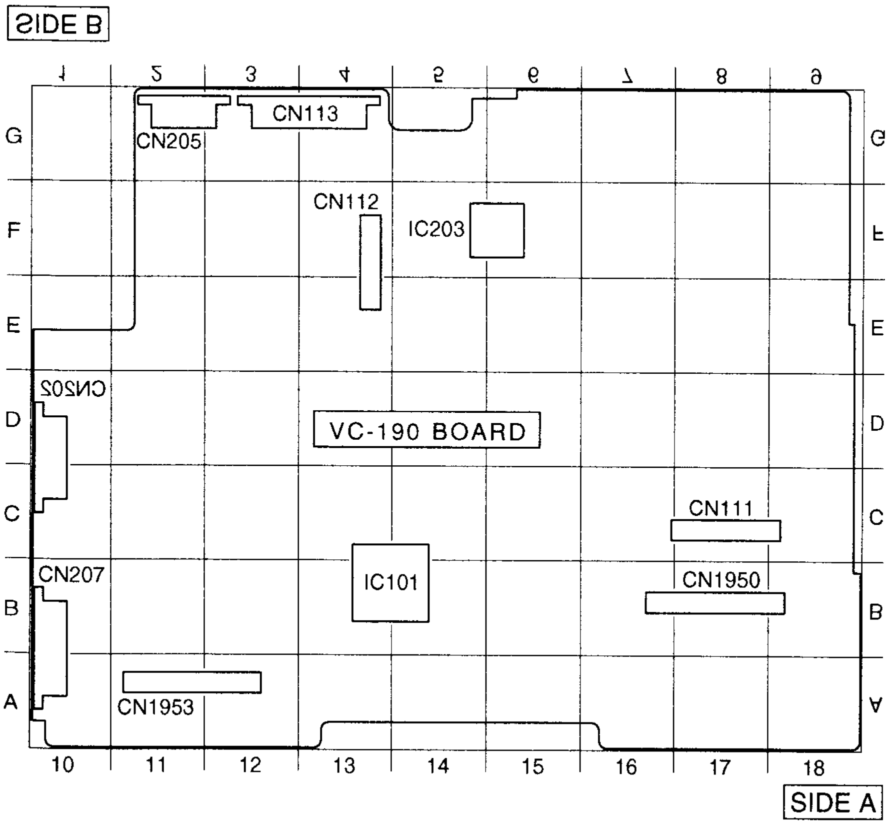
** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

<PARTS REFERENCE SHEET>

You can find the parts position of mount locations applying to boards of a set.

Take a copy CAMERA COLOR REPRODUCTION FRAME and PARTS REFERENCE SHEET with a clear sheet for use.


SIDE B
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C
B
A
CN205
CN113
CN112
IC203
CN202
VC-190 BOARD
CN111
CN207
IC101
CN1950
CN1953
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16
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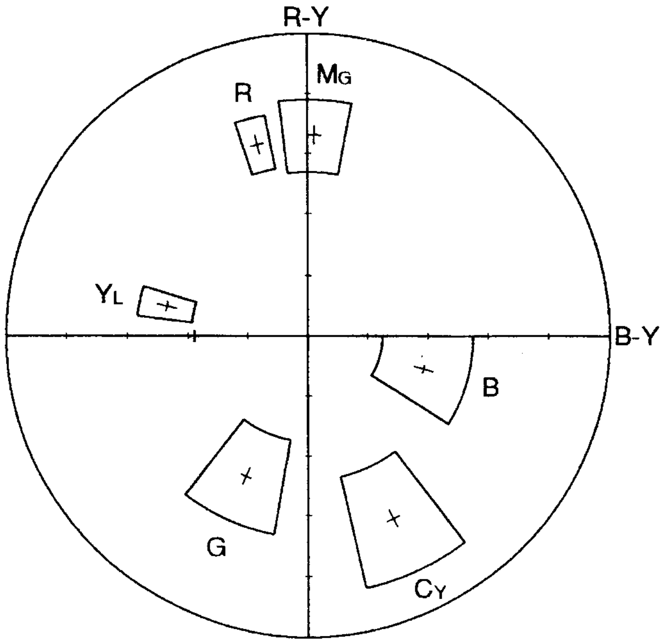
18
SIDE A

Take a copy CAMERA COLOR REPRODUCTION FRAME and PARTS REFERENCE SHEET with a clear sheet for use.

FOR CAMERA COLOR REPLRODUCTION ADJUSTMENT

For NTSC model


R-Y
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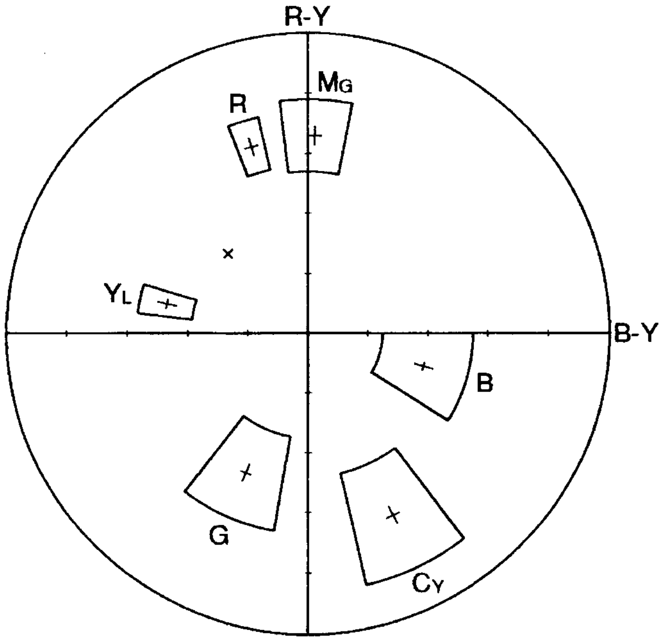
CCD-TR930

For PAL model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CCD-TR820E/TR825E/TR920E

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